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CLERK U.S. DISTRICT COURT
CENTRAL DIST. OF CALIF.
LOS ANGELES

BY: _____

8 Attorneys for Plaintiff Darrell Greenland

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11 **UNITED STATES DISTRICT COURT**
12 **CENTRAL DISTRICT OF CALIFORNIA**
13 **WESTERN DIVISION**

14 DARRELL GREENLAND, an
15 individual,

16 Plaintiff,

17 vs.

18 CHERVON NORTH AMERICA,
19 INC., a DE Corporation, MENARD,
20 INC., a WI Corporation; and LOWE'S
21 COMPANIES, INC., a N.C.
22 Corporation

23 Defendant.

Case No. 12-CV-09747-GW-(AJWx)

**FIRST AMENDED COMPLAINT FOR
INFRINGEMENT OF UNITED STATES
PATENT NOS. 6,080,041 AND 6,276,990**

DEMAND FOR JURY TRIAL

24 1. Plaintiff Darrell Greenland, an individual ("DG"), for his complaint,
25 and demanding trial by jury under Rule 38, Fed. R. Civ. P., and Local Rule 38-1,
26 alleges that Defendant Chervon North America, Inc., a Delaware Corporation
27 ("Chervon"), Menard, Inc., a Wisconsin Corporation ("Menard"), and Lowe's
28 Companies, Inc., a North Carolina Corporation ("Lowe's"), are infringing U.S.
Patent 6,080,041 (the "'041 patent") and U.S. Patent 6,276,990 (the "'990 patent")
(collectively "the DG patents"), by making selling, and offering to sell, in this
judicial district, saws that infringe the DG patents.

1 2. This is a civil action for patent infringement and arises under, among
2 other things, the United States Patent Laws, 35 U. S. C. section 10, et seq.
3 Jurisdiction is therefore based upon 28 U. S. C. sections 1331 and 1338(a),
4 providing for federal question jurisdiction of patent infringement actions and
5 exclusive jurisdiction of patent infringement actions in the U. S. district courts.

6 3. Plaintiff DG is informed and believes, and thereon alleges, that venue
7 in this court is proper under 28 U. S. C. section 1391 (c) and section 1400 (b)
8 because the acts of patent infringement alleged herein took place, at least in part,
9 within this judicial district.

10 4. Plaintiff DG is an individual residing in the State of California.

11 5. Defendant Chervon is a Delaware Corporation, and has its principal
12 place of business in Grand Rapids, Michigan.

13 6. Defendant Menard is a Wisconsin Corporation, and has its principal
14 place of business in Eau Claire, Wisconsin.

15 7. Defendant Lowe's is a North Carolina Corporation, and has its
16 principal place of business in Mooresville, North Carolina.

17 8. On June 27, 2000, the U. S. Patent and Trademark Office duly and
18 lawfully issued the '041 patent under the title *Compact Motorized Table Saw*. A
19 true and correct copy of the '041 patent is attached hereto as **Exhibit A**. On August
20 21, 2001, the U. S. Patent and Trademark Office duly and lawfully issued the '990
21 patent under the title *Tile Saw Having Improved Rollers*. A true and correct copy of
22 the '990 patent is attached hereto as **Exhibit B**.

23 9. Defendants have infringed the DG patents by making, selling, and
24 offering to sell, in this judicial district, saws covered by one or more of the claims in
25 the DG patents in this judicial district and elsewhere in the United States.
26 Defendants' sales, in this judicial district, of Husky saws, specifically models HD
27 Ridged WTS 2000L, HD Husky THD 950 LN, Menards Florcraft WTS 950 LN,
28 Lackmond Tile Doctor WTS 950 LN, Lackmond Beast WTS 950 LN, Lackmond

1 Beast 2000 LN, BOSH TC10, and Lowes Kobalt KB7005, have infringed the DG
2 patents. On information and belief, this infringement will continue unless enjoined
3 by this court.

4 8. Defendants' infringement of the DG patents has damaged DG in an
5 unknown amount. These damages continue to grow as Defendant's infringement
6 continues. Under Section 284 of Title 35 of the United States Code, DG seeks
7 damages adequate to compensate for this infringement in an amount no less than a
8 reasonable royalty, together with interest and costs affixed by the Court.

9 9. Defendants' continuing infringement of the DG patents has caused and
10 continues to cause irreparable harm to DG, including impairing the value of the DG
11 patents in an amount yet to be determined. Pursuant to Section 283 of Title 35 of the
12 United States Code, DG seeks a preliminary and a permanent injunction against
13 further infringement of the DG patents.

14 **PRAYER FOR RELIEF**

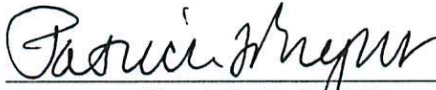
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16 WHEREFORE, DG prays for the following relief from this court against
17 Defendants:

- 18 1. An order, pursuant to 35 U.S.C. Section 271, declaring that Defendants
19 have infringed one or more claims of the DG patents;
 - 20 2. A preliminary and a permanent injunction against Defendants,
21 prohibiting Defendants from further infringement of the DG patents;
 - 22 3. An award of the actual damages DG has suffered by reason of the
23 infringement charged in this Complaint, in an amount not less than a reasonable
24 royalty on Defendants' sales of the products charged with infringing the DG patents;
 - 25 4. An award to Plaintiff DG of his costs of suit herein; and
 - 26 5. Such other and further relief as the Court may deem just and proper.
- 27
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1 Dated: January 24, 2013

Respectfully submitted,

2 WAGNER, ANDERSON & BRIGHT PC

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4 By: 

5 Patrick F. Bright

6 Attorneys for Plaintiff Darrell Greenland

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DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, and Local Rule 38-1, Plaintiff DG does hereby demand trial by jury against Defendants on each and every issue and claim as to which it is entitled to trial by jury under Rule 38(a) of the Federal Rules of Civil Procedure.

Dated: January 29, 2013

Respectfully submitted,
WAGNER, ANDERSON & BRIGHT PC

By: 
Patrick F. Bright
Attorneys for Plaintiff Darrell Greenland

EXHIBIT A



US006080041A

United States Patent [19]
Greenland

[11] **Patent Number:** 6,080,041
 [45] **Date of Patent:** Jun. 27, 2000

[54] **COMPACT MOTORIZED TABLE SAW**

FOREIGN PATENT DOCUMENTS

[76] **Inventor:** Darrell Greenland, 1650 Tenth St.,
 Santa Monica, Calif. 90404

2 681 055 5/1992 France .
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[21] **Appl. No.:** 08/906,356

OTHER PUBLICATIONS

[22] **Filed:** Aug. 5, 1997

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 pp. 21-32, incl.
 Target—1995, 7th Edition, cover page plus pp. 58 to 70,
 incl.
 K Diamond, Price List, Effective May 1997, 2 pgs.

Related U.S. Application Data

[63] Continuation-in-part of application No. 08/651,249, May
 23, 1996, abandoned, and application No. 08/655,205, Jun.
 7, 1996, abandoned.

[51] **Int. Cl.⁷** B24B 49/00

[52] **U.S. Cl.** 451/11; 125/13.01; 125/13.03;
 125/35; 451/411; 83/372

[58] **Field of Search** 83/471.2, 437.1,
 83/372, 698.11, 886; 125/12, 13.01, 13.03,
 35; 451/11, 393, 411, 455

Primary Examiner—Timothy V. Eley
Attorney, Agent, or Firm—Cislo & Thomas LLP

[57] **ABSTRACT**

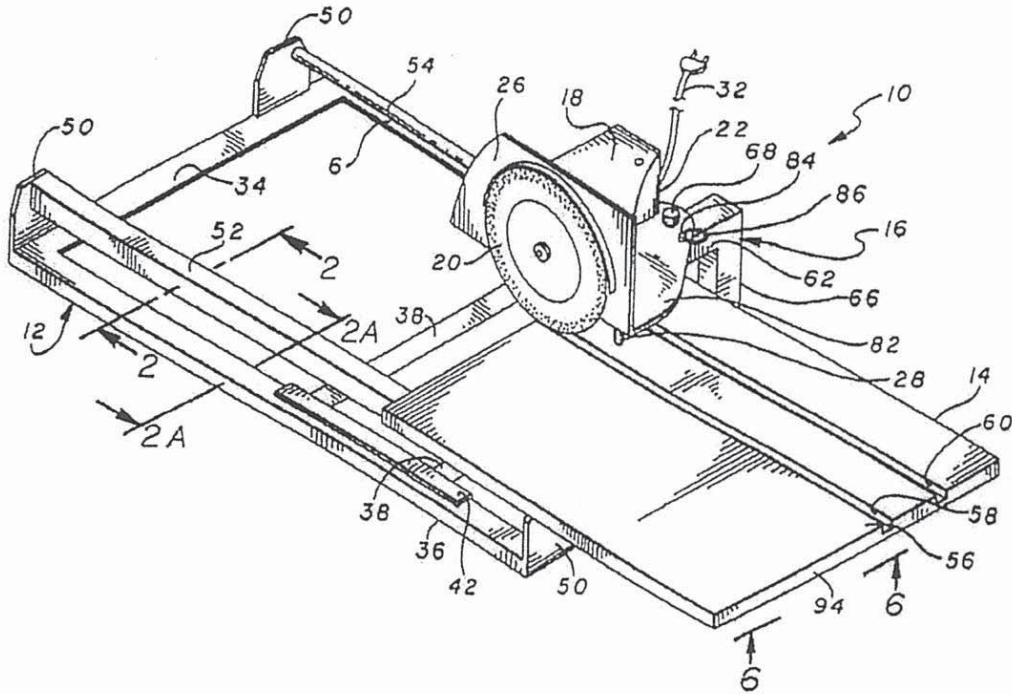
A saw with a compact frame that permits the cutting of large
 workpieces and that can be repeatedly operated repeatedly
 without requiring manual activation of an on/off switch. A
 special pivoting support arm pivots outwardly away from a
 motor assembly to allow the cutting of large workpieces
 while allowing the size of the saw to remain relatively
 compact and portable. An automatic power switch mecha-
 nism also is provided to automatically turn on the saw motor
 upon the placement of a workpiece adjacent to the saw
 blade. The saw table can be slid beyond the frame for the
 cutting of large workpieces.

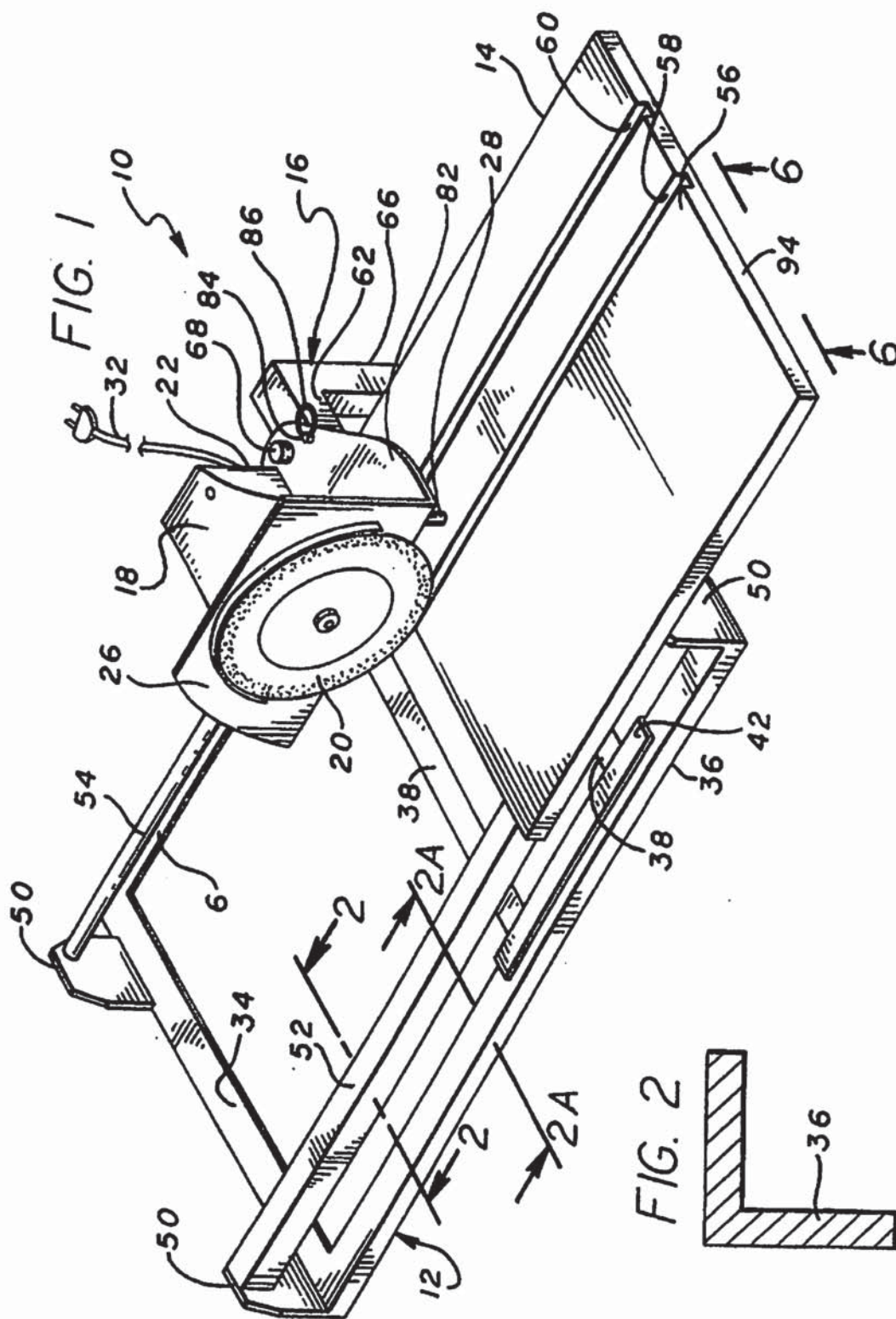
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20 Claims, 4 Drawing Sheets





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COMPACT MOTORIZED TABLE SAW**REFERENCE TO RELATED APPLICATIONS**

This application is a continuation in part of application Ser. No. 08/651,249 filed May 23, 1996, and application Ser. No. 08/655,205 filed Jun. 7, 1996, both of which are now abandoned. Additionally, priority benefit under the Patent Laws is claimed with respect to pending PCT application PCT/US97/10085, filed Jun. 9, 1997 claiming a priority date of Jun. 6, 1996.

BACKGROUND OF THE INVENTION

This invention relates generally to motorized table saws and, more particularly, to portable motorized table saws for the cutting of small workpieces, such as ceramic tile and the like.

Electrically powered table saws for the cutting of small workpieces, such as tile and the like have been well known for years. It is generally desirable for tile saws to be portable so that they can be used in close proximity to the tile job, which could be in a small bathroom or kitchen. Larger tile saws that are not readily portable must be left in the back of a work truck, thereby forcing a tile worker to waste time making numerous trips between the work area and the truck to cut tiles.

One such table saw includes a motor mounted to a support arm extending upward from the edge of a structural frame with a sliding table mounted thereon. A circular blade is mounted to the motor in a position to cut workpieces on the sliding table. The reciprocating table does not extend beyond the edges of the frame. Because the cutting of ceramic tile involves the use of water as a lubricant for the saw blade, the frame of the table saw is mounted on the upper edges of a rectangular tub functioning as a catch basin for water used in the cutting process. The motor of the saw is electrically powered and has a motor switch mounted thereon that is manually activated each time a tile is to be cut.

While this table saw has proven to be generally satisfactory, it has a number of drawbacks that render it inconvenient to use and limit its ability to cut different size tile in confined spaces, such as a small bathroom or the like. Significantly, the distance between the saw blade and motor support arm limits the size of the workpiece that can be cut by the saw. Further, because the reciprocating table is limited in its travel to the ends of the frame, the saw is further limited in its ability to cut long tiles. Yet another drawback is related to the manual switch that activates the motor. Because this switch must be activated by the operator again and again as each of numerous tiles are cut, a particular job will take longer due to the cumulative time spent in activating and deactivating the switch for each tile cut.

It should, therefore, be appreciated that there is a need for a portable and compact saw that permits the cutting of large workpieces and that can be repeatedly operated without requiring manual activation of an on/off switch. The present invention fulfills this need.

SUMMARY OF THE INVENTION

The present invention provides a portable and compact saw that permits the cutting of large workpieces and that can be repeatedly operated without requiring manual activation of an on/off switch. A special pivoting support arm allows the cutting of large workpieces while allowing the size of the saw to remain relatively compact.

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In particular, and for purposes of example only, the invention provides a compact saw for cutting a workpiece. The saw includes a frame, a table, a support arm and a motor assembly. The frame has at least one side edge and at least one end edge and the table is mounted to the frame to support the workpiece thereon. The table has an upper surface aligned in a predetermined plane. The support arm is mounted adjacent to the side edge of the frame and projects upwardly from the frame. The motor assembly is mounted to the support arm and includes a motor and a saw blade connected to the motor to cut the workpiece. The support arm is pivotally mounted to the frame for rotation about a first axis generally perpendicular to the plane that is aligned with the upper surface of the table.

In a more detailed aspect of the invention, the support arm pivots about the axis between a stowed position and an extended position. In the stowed position, the support arm is aligned with the side edge of the frame and, in the extended position, the arm projects away from the side edge of the frame to increase the distance between the support arm and the blade to advantageously allow cutting of larger workpieces.

More detailed aspects of the invention provide for the motor assembly to be pivotally mounted to the support arm for rotation about a second predetermined axis. This second axis can be aligned with the first predetermined axis about which the support arm pivots to enable the movement of the support arm between the extended and stowed positions without requiring the movement of the motor assembly.

Another embodiment of the invention provides for a compact saw that includes a sensor and a power switch mounted to a motor assembly. The power switch is connected to a power source and the motor, thereby allowing the sensor to activate the power switch to energize the motor assembly. In a detail of this embodiment, a sensor is an arm pivotally mounted to the power switch. The arm projects from the switch toward a predetermined location above the saw table so that movement of the workpiece toward the saw blade causes the workpiece to engage the arm, thereby rotating it and activating the power switch. This automatic activation of the saw advantageously allows an operator to quickly activate the saw for repeated cutting operations.

The features described above are related to several significant advantages. In particular, because the pivoting support arm is movable between a stowed position and an extended position, the overall size of the saw is such that it can be used in confined spaces, such as small bathrooms and the like. While facilitating the compact size of the saw, the special pivoting arm advantageously pivots to its extended position to enable the saw to cut larger size tile.

Another embodiment of the invention provides a sliding carriage assembly mounted between the frame and the table for movement parallel to an edge of the frame so that the table translates to a position beyond the end of the frame for cutting of a larger workpiece. This sliding table contributes to the compact size of the saw by advantageously traveling beyond the frame to hold and cut large workpieces when desired.

Other features and advantages of the present invention will become apparent from the following description of the preferred embodiment, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The following drawings illustrate the preferred embodiment of the invention. In such drawings:

6,080,041

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FIG. 1 is a perspective view of a compact tile saw according to the invention;

FIG. 2 is a cross-sectional view of the compact tile saw of FIG. 1, taken along lines 2—2;

FIG. 2A is a cross-sectional view of the compact tile saw of FIG. 1, taken along lines 2A—2A;

FIG. 3 is a rear view of the compact tile saw of FIG. 1;

FIG. 4 is detailed view of the switch lever of the compact tile saw of FIG. 1;

FIG. 5 is a cross-sectional view of the compact tile saw of FIG. 3, taken along lines 5—5;

FIG. 6 is bottom view of the table and carriage of the compact tile saw of FIG. 1; and

FIG. 7 is a plan view of the compact tile saw of FIG. 1, showing its rotating motor support arm in an extended position and showing in phantom the rotating motor support arm in a stowed position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the drawings, and particularly to FIGS. 1 and 7, the invention is preferably embodied by a new and improved compact saw, generally referred to by reference numeral 10, for the cutting of workpieces such as tile and the like. The compact tile saw has a rectangular frame 12 upon which are mounted a sliding table 14 and a special pivoting support arm 16 holding a motor assembly 18 above the table.

The motor assembly 18 includes a cutting blade 20 mounted to an electric motor 22 within a housing 24. A saw blade guard 26 is located around the upper portion of the saw blade. Both the guard and the housing of the motor assembly can be made of plastic or other suitable material. The motor assembly also includes a special lever 28 mounted to a power switch 30 to automatically turn on the motor as a tile is moved toward the motor assembly 18. It should be appreciated that, for the purpose of clarity, the housing of the motor assembly is not shown in FIG. 1. A power cord 32 extends from the motor assembly to provide electric power to the motor.

As is described in more detail below, the pivoting support arm has a "U" shape and is movable between a stowed position A and an extended position B. Because of this special pivoting arm, the collective size of the saw 10 is such that it can be used in confined spaces, such as small bathrooms and the like. While facilitating the compact size of the saw, the special pivoting arm advantageously pivots to its extended position to enable the saw to cut larger size tile. Another component of the saw 10 that contributes to its compact size is the special sliding table 14, which can advantageously travel beyond the frame 12 to enable the saw to cut larger workpieces. Yet another advantage is related to the lever 28, which engages a workpiece to automatically energize the saw motor 22 as an operator moves the table holding the workpiece toward the motor.

The frame 12 and the other components of the saw are preferably formed of a rigid high strength material such as steel or other materials of similar characteristics. The frame has two end edges 34 and two longer side edges 36. A pair of braces 38 extend between the side edges of the frame to support the U-shaped support arm 16, which is mounted to the end of the braces 40 adjacent to one of the side edges 36 of the frame. As is shown in FIG. 2A, to facilitate longitudinal movement of the support arm 16 and the motor assembly 18, the braces have L-shaped edges 42 that can

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slide along the side edges 36 of the frame 12. The motor 22 preferably is a commonly available electrically powered motor. A pin 44 mounted through aligned holes 46 and 48 in the L-shaped edge 42 of the brace and in the side edge 36 of the frame 12 can be used to lock the braces 38 in a particular position with respect to the frame 12.

A pair of brackets 50 are mounted to each end edge 34 of the frame 12 to project upwardly therefrom to support a support rail 52 and a guide rail 54, which are each fixedly connected to the brackets 50 on each end of the frame by welded seams or other suitable mechanical connections. As shown in FIG. 2, the support rail 52 is preferably made of angle iron. The support rail and the guide rail allow lateral movement of the table along their length. The table has an upper surface 56, or top side, with a pair of grooves 58, 60 extending the length of the table. The groove 58 nearest the middle of the table provides clearance for the blade 20 of the saw 10 as it cuts the tile. As is well known, the frame 12 can be mounted on a catch basin (not shown) to catch water used to lubricate the cutting process.

As is illustrated in FIGS. 1, 3 and 7, the pivoting U-shaped support arm 16, includes a horizontal upper portion 62, a horizontal lower portion 64 and a vertical portion 66 therebetween. The support arm 16 has an upper pivot pin 68 and a lower pivot pin 70, both of which are aligned along a common vertical axis. As shown in FIG. 5, the lower portion of the arm 64 has a circular pivot plate 72 with the pivot pin 70 extending therethrough to a rectangular base plate 74 welded to the ends 40 of the braces 38 adjacent to the side edge 36 of the frame 12. The base plate and the pivot plate have sets of aligned holes 76 ninety degrees apart to accept a lock pin 78 therein to lock the arm in either the stowed A or extended B positions. Like the other ends of the braces 38, the base plate rides on the side edge 36 of the frame 12 to allow lateral movement of the arm 16 and motor assembly 18 with respect to the frame. In this regard, a frame pin 80 mounts in another hole in the base plate and aligned holes 82 in the frame to lock the lateral position of the support arm and motor assembly. The arm 16 is preferably made of steel tubing that has a square cross section.

The upper pivot pin 68 extends upward from the upper portion 62 of the support arm 16 to mount to an oblong motor support 82 that is part of the motor assembly 18. Aligned holes 84 in the motor support and the upper portion of the support arm cooperate with another lock pin 86 to lock the motor 22 in a position so that the saw blade 20 is aligned with the middle groove 58 in the table 14. This particular arrangement advantageously allows the motor assembly 18 to remain in the same position while the support arm 16 is in either of its extended 13 or stowed A positions.

The above arrangement advantageously allows the compact tile saw 10 to have a compact size because of its ability to cut small tiles can be cut while the support arm 16 is in the stowed position A. Further, despite its compact size, the tile saw can cut larger tiles with its rotating support arm in its extended position B. In particular, the saw can cut such larger tiles because the distance between the saw blade 20 and the vertical portion 66 of the support arm 16 is greater when the support arm is pivoted to its extended position B.

As illustrated in FIG. 6, the table of the compact tile saw 10 has a pair of telescoping extension rails 88 that slide through holes 90 in a carriage 92 mounted under the table 14. The table has end edges 94 that extend downwardly. The telescoping rails 88 are mounted between each end edge of the table and are in a position that is parallel to the side edges 36 of the frame 12. The carriage slides on the guide rail 54

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and the support rail 56 of the frame, thus providing two degrees of movement for the table 14. In particular, as the table is moved laterally, the carriage 92 slides to the end 34 of the frame 12. However, because of the telescoping rails 88, the movement of the table is advantageously not limited by the distance in which the carriage can move on the frame. Instead, when the carriage 92 reaches the end of the frame, the table can slide yet further because the telescoping rails 88 move within the holes 90 in the carriage to permit further lateral movement of the table beyond both ends of the frame 34. Such an arrangement can allow yet larger tiles to be cut without increasing the size of the frame of the compact tile saw 10. The table can be locked to the center of the carriage by a lock button 94 for the cutting of small tiles. When the lock button is released, the above-identified further movement of the table is accomplished.

Lastly, the automatic operation of the preferred tile saw 10 will be described. As shown in FIG. 4, the elongated switch lever 28 is pivotally mounted to a power switch 30 mounted to the motor assembly 18 near the front of the saw blade guard 26. The switch lever projects downwardly from the saw blade guard toward the table 14. The end of the switch lever 96 is positioned to engage a tile that is advanced toward the blade 20 by moving the table 14. When the tile hits the switch lever 28, it rotates and activates the power switch 30, thereby automatically turning the saw 10 on upon the approach of the tile. A spring 98 mounted between the motor assembly 18 and the switch lever 26 biases the switch lever toward its downward position so that the lever snaps back after the tile has been cut, thereby turning the off the saw motor 22. If manual operation is required, the lever 28 may be placed in a latch 100 that holds the lever in a retracted position 102. When the lever 28 is in such a retracted position the motor 22 is left on for operation by a main power switch 30. It should be appreciated that other sensors could be used to automatically activate the saw motor upon the approach of a tile. The switch lever can have a curved leading edge 96 to smoothly engage the oncoming tile.

While a particular form of the invention has been illustrated and described, it will be apparent that various modifications can be made without departing from the spirit and scope of the invention. Accordingly, it is not intended that the invention be limited, except as by the appended claims.

I claim:

1. A saw support for cutting a workpiece, comprising:
 - a frame having at least one side edge and at least one end edge;
 - a supported table slidably mounted to a free sliding supported carriage assembly mounted on said frame, said table being adapted to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;
 - a motor assembly operatively supported by said frame including a motor and a saw blade connected to the motor to cut the workpiece; and
 - said free sliding carriage assembly being mounted for movement parallel to the edge of the frame for cutting of the workpiece such that said table and free sliding carriage are moveable to a predetermined position beyond at least one end of said frame.
2. A saw support for cutting a workpiece, comprising:
 - a frame having at least one side edge and at least one end edge;
 - a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;

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a motor assembly operatively supported by said frame including a motor and a saw blade connected to the motor to cut the workpiece;

a free sliding carriage assembly mounted between the frame and said table for movement parallel to the edge of the frame for cutting the workpiece such that said table is moveable to a predetermined position beyond the end of the frame, said carriage assembly having at least one guide rail mounted to the frame in a position parallel to the edge of the frame and at least one extension rail slidably mounted to the guide rail and fixedly mounted to said table.

3. A compact saw for cutting a workpiece, the compact saw comprising:

a frame having at least one side edge and at least one end edge;

a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;

a support arm mounted adjacent to the side edge of the frame and projecting upwardly from the frame; and

a motor assembly mounted to the support arm, the motor assembly including a motor and a saw blade for cutting the workpiece,

wherein the support arm is pivotally mounted to the frame for rotation about a first axis generally perpendicular to the plane of the upper surface of the table and wherein the motor assembly also is pivotally mounted to the support arm for rotation about a second predetermined axis.

4. A compact saw as defined in claim 3, wherein the support arm pivots about the axis between a stowed position and an extended position, wherein in the stowed position the support arm being aligned with the side edge of the frame and in the extended position the arm projecting away from the side edge of the frame to increase the space between the support arm and the blade to allow cutting of larger workpieces.

5. A compact saw as defined in claim 4, wherein the second predetermined axis about which the motor assembly pivots is aligned with the first predetermined axis about which the support arm pivots.

6. A compact saw as defined in claim 3, further comprising a sensor and a power switch mounted to the motor assembly, the power switch being connected to a power source and the motor, wherein the sensor activates the power switch to energize the motor.

7. A compact saw as defined in claim 6, wherein the sensor is an arm pivotally mounted to the power switch, the arm projecting from the switch toward a predetermined location above the table such that upon movement of the workpiece toward the saw blade, the workpiece engages the arm, thereby rotating the arm and activating the power switch.

8. A compact saw as defined in claim 7, further comprising a spring mounted between the arm and the motor assembly to bias the arm toward the predetermined location above the table.

9. A compact saw as defined in claim 7, wherein the arm can pivot into a retracted position whereby the arm does not contact the workpiece as it approaches the saw blade.

10. A compact saw as defined in claim 3, further comprising a sliding carriage assembly mounted between the frame and the table for movement parallel to the edge of the frame for cutting of the workpiece such that the table translates to a position beyond the end of the frame.

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11. A compact saw as defined in claim 10, wherein the carriage comprises:

a first one guide rail mounted to the frame in a position parallel to the edge of the frame; and

a carriage mounted to the table of the saw, the carriage adapted to slide upon the guide rail to thereby move the table.

12. A compact saw as defined in claim 11, wherein the carriage is slidably mounted to the table of the saw, the table including a first extension rail for which the carriage is adapted to slide along.

13. A compact saw as defined in claim 11, further comprising:

a second guide rail mounted to the frame in a position parallel to the edge of the frame and spaced apart from the first guide rail; wherein the carriage also is adapted to slide upon the second guide rail to thereby move the table.

14. A compact saw for cutting a workpiece, comprising: a frame having at least one side edge and at least one end edge;

a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;

a support arm mounted adjacent to the side edge of the frame and projecting upwardly from the frame;

a motor assembly mounted to the support arm, the motor assembly including a motor and a saw blade connected to the motor to cut the workpiece;

a power switch mounted to the motor assembly, the power switch connected to a power source and the motor;

a sensor mounted adjacent to the motor assembly to activate the power switch upon movement of the workpiece toward the saw blade, thereby energizing the motor assembly for cutting the workpiece and a sliding carriage assembly mounted between the frame and the table for movement parallel to the edge of the frame for cutting of the workpiece such that the table is moveable to a predetermined position beyond the end of the frame.

15. A compact saw as defined in claim 14, wherein the sensor is a pivoting lever arm extending from the motor assembly toward a predetermined location for engagement with the workpiece.

16. A compact saw as defined in claim 15, further comprising a spring mounted between the motor assembly and the arm to bias the arm toward the predetermined location.

17. A compact saw for cutting a workpiece, comprising: a frame having at least one side edge and at least one end edge;

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a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;

a support arm mounted adjacent to the side edge of the frame and projecting upwardly from the frame;

a motor assembly mounted to the support arm, the motor assembly including a motor and a saw blade connected to the motor to cut the workpiece; and

a sliding carriage assembly mounted between the frame and the table for movement parallel to the edge of the frame for cutting of the workpiece such that the table is moveable to a predetermined position beyond the end of the frame, wherein the carriage assembly comprises:

at least one guide rail mounted to the frame in a position parallel to the edge of the frame; and

at least one extension rail slidably mounted to the guide rail and operatively mounted to the table of the saw.

18. A saw support for cutting a workpiece; comprising: a frame having at least one side edge and at least one end edge;

a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;

a motor assembly operatively supported by said frame including a motor and a saw blade connected to the motor to cut the workpiece; and

a free sliding carriage assembly mounted directly on said frame and supporting said table for movement parallel to the edge of the frame for cutting of the workpiece such that said table is moveable to a predetermined position beyond the end of the frame, said frame being open and formed by spaced, rigid members.

19. A saw support as defined in claim 18, wherein the carriage assembly comprises:

at least one guide rail mounted to the frame in a position parallel to the edge of the frame; and

a carriage mounted to said table, the carriage adapted to freely slide upon the guide rail to thereby move said table.

20. A saw support as defined in claim 19, wherein the carriage assembly comprises:

at least one guide rail mounted to the frame in a position parallel to the edge of the frame; and

at least one extension rail slidably mounted to the guide rail and fixedly mounted to said table.

* * * * *

EXHIBIT B



US006276990B1

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(54) **TILE SAW HAVING IMPROVED ROLLERS**

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(51) Int. Cl.⁷ **B24B 49/00**

(52) U.S. Cl. **451/11; 125/13.03**

(58) Field of Search **451/11, 188, 111,
451/213, 359, 361; 125/13.01, 35**

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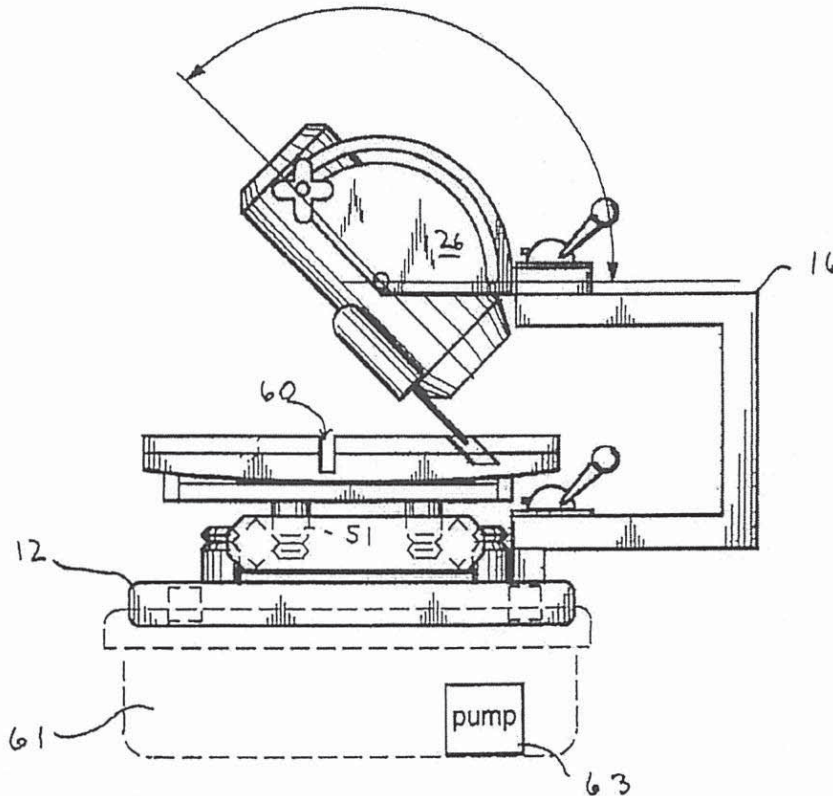
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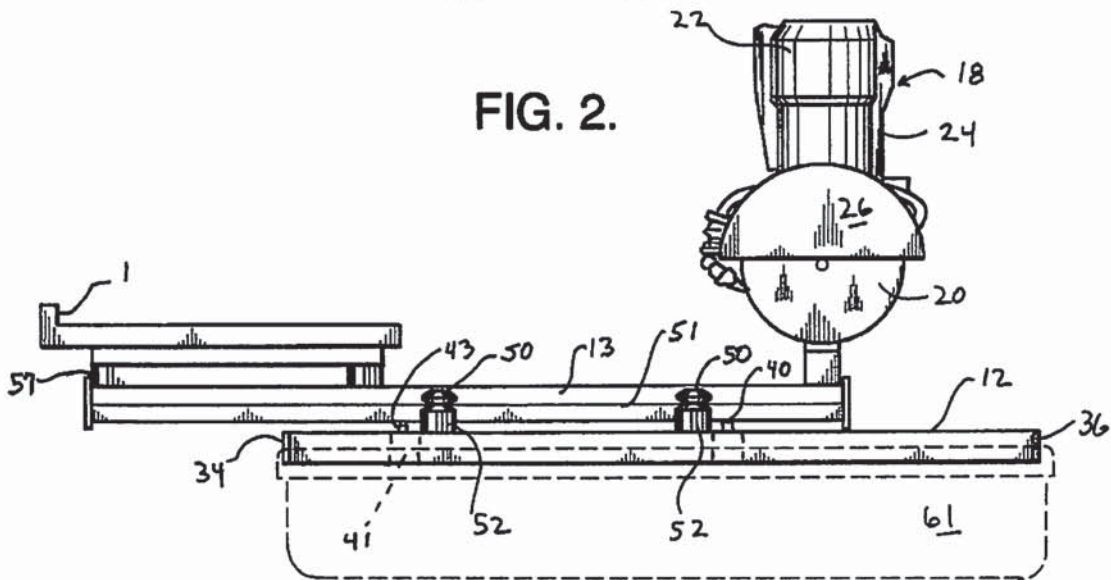
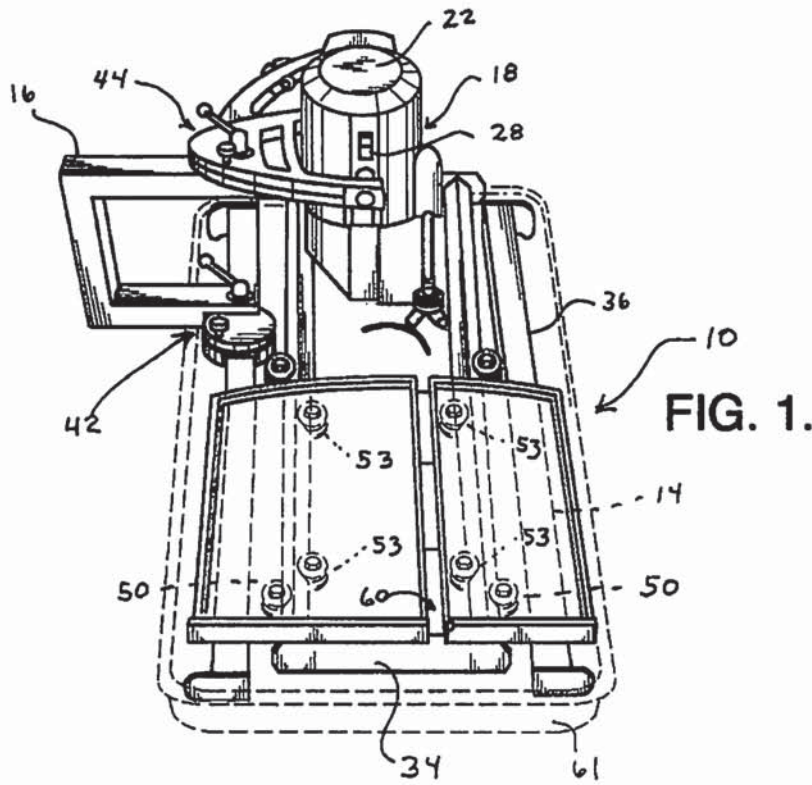
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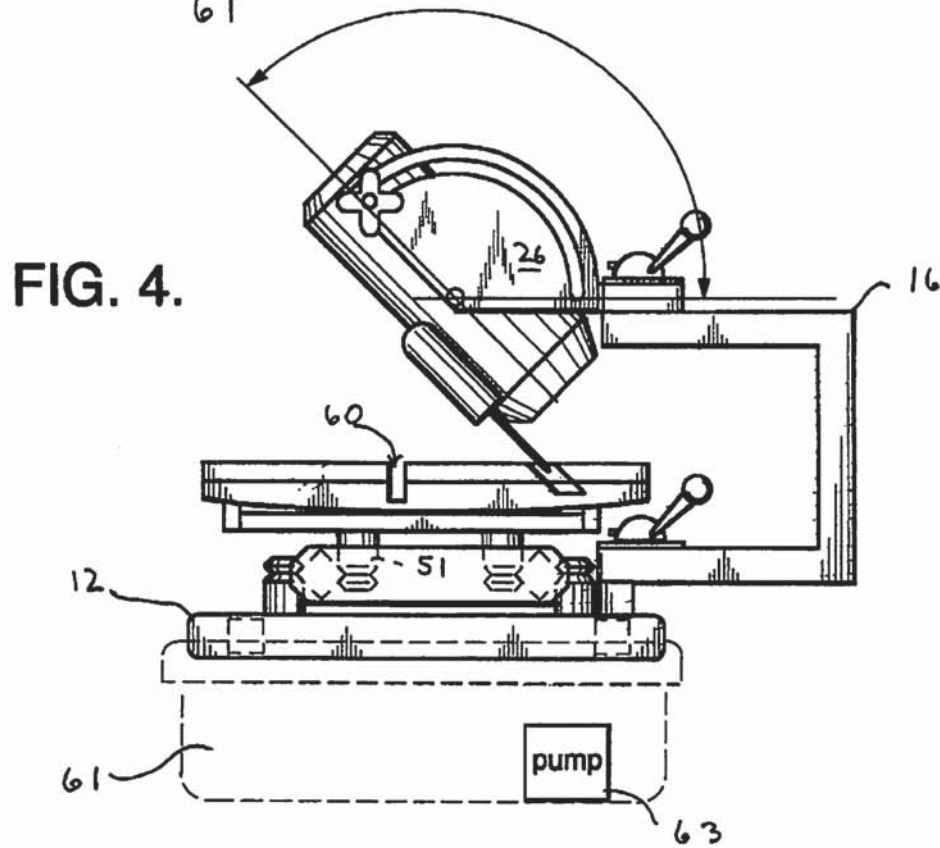
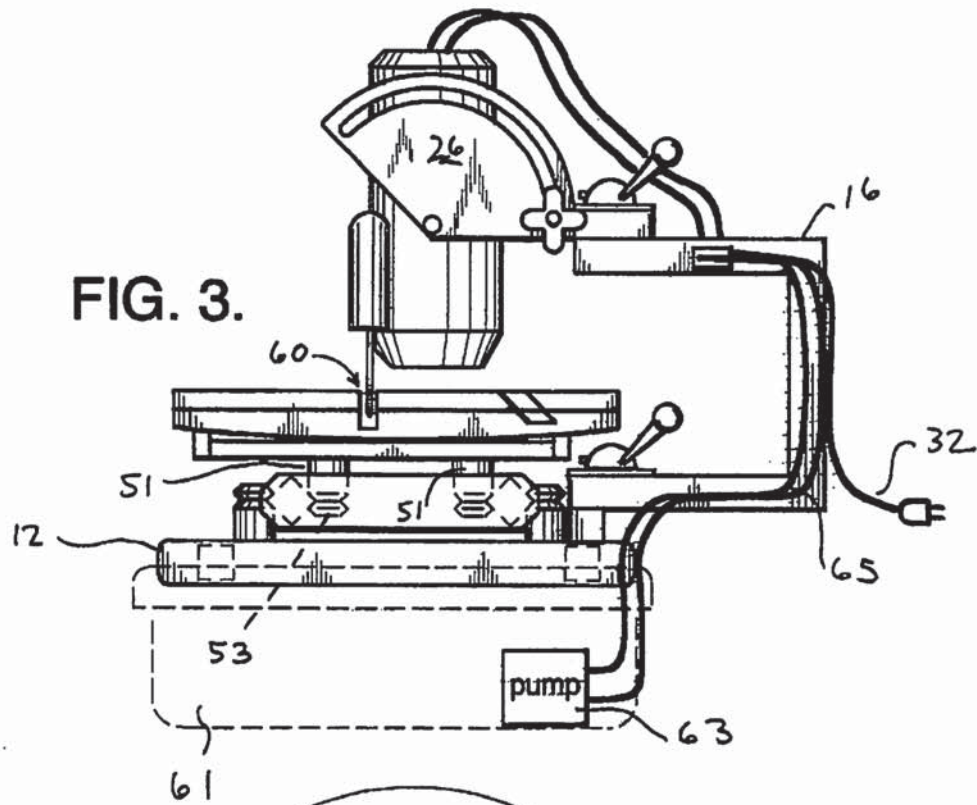
(57) **ABSTRACT**

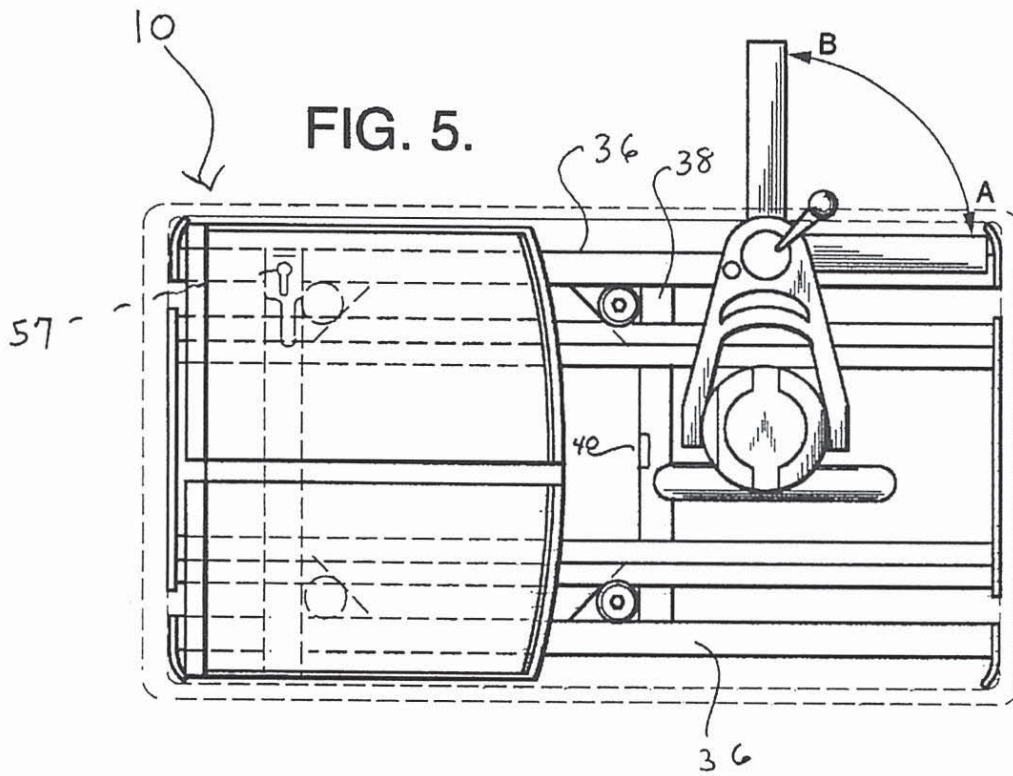
A unique table saw having a roller mounted table operatively associated with a roller mounted carriage operatively secured to a supporting frame which allows the table and associated carriage to move outwardly from the supporting frame to allow the cutting of larger workpieces than could ordinarily be accomplished on the ordinary, conventional table saw.

12 Claims, 3 Drawing Sheets









US 6,276,990 B1

1

TILE SAW HAVING IMPROVED ROLLERS**CROSS-REFERENCES TO RELATED APPLICATIONS**

This application is a continuation-in-part application of application Ser. No. 08/906,356 filed Aug. 5, 1997, and entitled COMPACT MOTORIZED TABLE SAW.

BACKGROUND OF THE INVENTION

This invention as its parent relates generally to motorized table saws and, more particularly, to portable motorized table saws for the cutting of small workpieces, such as ceramic tile and the like.

As previously described in my earlier application, electrically powered table saws for the cutting of small workpieces, such as tile and the like have been well known for years. It is generally desirable for tile saws to be portable so that they can be used in close proximity to the tile job, which could be in a small bathroom or kitchen. Larger tile saws that are not readily portable must be left in the back of a work truck, thereby forcing a tile worker to waste time making numerous trips between the work area and the truck to cut tiles.

One such table saw includes a motor mounted to a support arm extending upward from the edge of a structural frame with a sliding table mounted thereon. A circular blade is mounted to the motor in a position to cut workpieces on the sliding table. The reciprocating table does not extend beyond the edges of the frame. Because the cutting of ceramic tile involves the use of water as a lubricant for the saw blade, the frame of the table saw is mounted on the upper edges of a rectangular tub functioning as a catch basin for water used in the cutting process. The motor of the saw is electrically powered and has a motor switch mounted thereon that is manually activated each time a tile is to be cut.

As stated in my earlier application, while this table saw has proven to be generally satisfactory, it has a number of drawbacks that render it inconvenient to use and limit its ability to cut different size tile in confined spaces, such as a small bathroom or the like. Significantly, the distance between the saw blade and motor support arm limits the size of the workpiece that can be cut by the saw. Further, because the reciprocating table is limited in its travel to the ends of the frame, the saw is further limited in its ability to cut long tiles. Yet another drawback is related to the manual switch that activates the motor. Because this switch must be activated by the operator again and again as each of the numerous tiles are cut, a particular job will take longer due to the cumulative time spent in activating and deactivating the switch for each tile cut.

It should, therefore, be appreciated that there is a need for a portable and compact saw that has easily moveable operating components and which permits the cutting of large workpieces. The present invention fulfills this need.

SUMMARY OF THE INVENTION

The present invention provides a portable and compact saw that permits the cutting of large workpieces and that can be repeatedly operated by reason of the roller system utilized without becoming clogged or difficult to use. A pivoting or stationary support arm allows the cutting of large workpieces, while allowing the size of the saw to remain relatively compact.

In particular, and for purposes of example only, the invention provides a compact saw for cutting a workpiece.

2

The saw includes a frame, a carriage, a table, a support arm and a motor assembly. The frame has at least one side edge and at least one end edge and the table is mounted to the carriage, in roller fashion, to support the workpiece thereon.

The carriage in turn is roller mounted on the frame for linear movement. The table has an upper surface aligned in a predetermined plane. The support arm is mounted adjacent to the side edge of the frame and projects upwardly from the frame and may be stationary or pivotable for compactness.

The motor assembly is mounted to the support arm and includes a motor and a saw blade connected to the motor to cut the workpiece. As indicated, the support arm may be pivotally mounted to the frame for rotation about a first axis generally perpendicular to the plane that is aligned with the upper surface of the table.

In a more detailed aspect of the invention, as disclosed in my earlier application, the support arm pivots about the axis between a stowed position and an extended position. In the stowed position, the support arm is aligned with the side edge of the frame and, in the extended position, the arm projects away from the side edge of the frame to increase the distance between the support arm and the blade to advantageously allow cutting of larger workpieces. However, where the support arm is fixed, advantages of the disclosed invention are readily apparent.

More detailed aspects of the invention provide for the motor assembly to be pivotally mounted to the support arm for rotation about a second predetermined axis. This second axis can be aligned with the first predetermined axis about which the support arm pivots to enable the movement of the support arm between the extended and stowed positions without requiring the movement of the motor assembly.

Though not disclosed herein, this embodiment of the invention may provide for the compact saw that includes a sensor and a power switch mounted to a motor assembly. As disclosed in my earlier application the power switch is connected to a power source and the motor, thereby allowing the sensor to activate the power switch to energize the motor assembly. In this embodiment, the sensor is an arm pivotally mounted to the power switch. The arm projects from the switch toward a predetermined location above the saw table so that movement of the workpiece toward the saw blade causes the workpiece to engage the arm, thereby rotating it and activating the power switch. This automatic activation of the saw advantageously allows an operator to quickly activate the saw for repeated cutting operations. All of this is adequately disclosed in my earlier application and may be included in the invention disclosed herein. The sliding carriage assembly is roller mounted between the frame and the table for linear movement parallel to an edge of the frame so that the table translates to a position beyond the end of the frame for cutting of a larger workpiece. This sliding table contributes to the compact size of the saw by advantageously traveling beyond the frame to hold and cut large workpieces when desired. The roller mounted table secured to the carriage is linearly moveable with respect thereto. Having roller mounting as opposed to slide mounting facilitates use of the saw and also makes the saw easier to use where tile cutting debris is expected to accumulate on working parts.

Other features and advantages of the present invention will become apparent from the following description of the preferred embodiment, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The following drawings illustrate the preferred embodiment of the invention. In such drawings:

US 6,276,990 B1

3

FIG. 1 is a perspective top view of a compact tile saw according to the invention;

FIG. 2 is a side elevational view of the compact tile saw of FIG. 1;

FIG. 3 is a front view of the compact tile saw of FIG. 1;

FIG. 4 is a view similar to FIG. 3 showing how the saw on cutting means may be pivotally mounted; and

FIG. 5 is a top view of the compact tile saw of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

With reference now to the drawings, the invention is preferably embodied by a new and improved compact saw, generally referred to by reference numeral 10, for the cutting of workpieces such as tile and the like. The compact tile saw has a rectangular frame 12 upon which are mounted a roller mounted carriage 13 upon which is roller mounted sliding table 14. A pivoting support arm 16 holding a motor assembly 18 above the table 14.

The motor assembly 18 includes a cutting blade 20 mounted to an electric motor 22 within a housing 24. A saw blade guard 26 is located around the upper portion of the saw blade 20. Both the guard 26 and the housing 24 of the motor assembly can be made of plastic or other suitable material. The motor assembly may include a special lever (not shown) mounted to a power switch to automatically turn on the motor as a tile is moved toward the motor assembly 18, as is disclosed in the parent application. A power cord 32 extends from the motor assembly to provide electric power to the motor. A manual switch 28 is also provided on the motor housing 24 by which to turn the power on and off.

As is described in more detail below with respect to the pivotable support arm embodiment, the pivoting support arm has a "U" shape and is movable between a stowed position A and an extended position B (FIG. 5). Because of this special pivoting arm, the collective size of the saw 10 is such that it can be used in confined spaces, such as small bathrooms and the like. While facilitating the compact size of the saw, the special pivoting arm advantageously pivots to its extended position to enable the saw to cut larger size tile. Another component of the saw 10 that contributes to its compact size is the special roller mounted table 14, which can advantageously travel beyond the frame 12 to enable the saw to cut larger workpieces. It is obvious that the support arm 16 may be fixed as opposed to pivotable and still obtain certain attributes of the invention.

The frame 12 and the other components of the saw are preferably formed of a rigid high strength material, such as steel or other materials of similar characteristics. Extrusions are commonly used as rail members, frame and other components. The frame has two end edges 34 and two longer side edges 36. Lateral brace 38 extends between the side edges 36 of the frame 12 to provide rigidity to the frame and to limit the travel distance of carriage 13 by means of upstanding tab 40, towards saw 20. Oppositely, to limit travel of carriage 13 away from saw 20 and to provide additional rigidity, lateral brace 41 with upstanding limit tab 43 is provided. As is shown, to facilitate pivotal or arc-wise movement of the support arm 16 and the motor assembly 18, the arm 16 is pivotally supported from frame 12 through pivot 42 at its lower end and through pivot 44 at its open end. Thus, the arm 16 may pivot or move along an arc AB as seen in FIG. 5 and the motor 18 may pivot in a plane parallel to table 14. The motor 22 preferably is a commonly available electrically powered motor. The frame 12 and more specifically the lateral, elongate side edges 36 are provided with

4

integral track means 51 running the length of frame 12. Track means 51 is shown in the form of a rectangular bar presenting V-shaped side walls.

Fixed to the support frame 12 are spaced and opposed rollers 50 having grooves 52 to be received by track means 51. Each of the rollers 50 are mounted on upstanding posts 52 which are integrally formed, in this instance with frame 12. Each roller 50 is mounted via through bolts for free roller movement thereabout such that carriage 13 smoothly travels in linear fashion between the stopping tabs 40 and 43. In similar fashion, table 14 has four integrally formed, spaced and opposed roller mounting block portions 51 each rotatably supporting rollers 53 such that table 14 is roller, slidably mounted on the opposite side of the track means 51 that carriage 13 rides upon. The exterior surfaces 55 and 57 of mounting block portions 51 provide abutment stops for table 14, limiting the linear movement thereof with respect to carriage 13 by reason of engagement therewith.

As shown, the frame 12 is preferably made of angle iron. The track means and the rollers allow lateral or linear movement of the table and carriage along their lengths. The table 14 has an upper surface 56, or top side, with an intermediate space 60 extending the length of the table. The intermediate space 60 of the table provides clearance for the blade 20 of the saw 10 as it cuts the tile. As is well known, the frame 12 can be mounted on a catch basin 61 to catch water used to lubricate the cutting process. Here the catch basin 61 takes the form of a plastic tub within which water is contained. The pump 63 pumps water (not shown) via hose 65 to saw 20.

The above arrangement advantageously allows the compact tile saw 10 to have a compact size because of its ability to cut small tiles which can be cut while the support arm 16 is in the stowed position A. Further, despite its compact size, the tile saw can cut larger tiles with its rotating support arm in its extended position B. In particular, the saw can cut such larger tiles because the distance between the saw blade 20 and the vertical portion of the support arm 16 is greater when the support arm is pivoted to its extended position B.

Further, as previously indicated, the table of the compact tile saw 10 has a pair of rollers that roll on carriage 13 itself roller mounted to frame 12. The table may have an end edge 1 that extends upwardly. The rollers 53 are mounted between each end edge of the table and are in a position that is parallel to the side edges of the frame 12 and allows for roller movement along the track means 51. The carriage 13 rolls on the track means 51 supported off of rollers 50 supported off frame 12. In particular, as the table is moved laterally, the carriage 13 slides to the end of the frame 12. However, because of the roller mounting the table is advantageously not limited by the distance in which the carriage can move on the frame. Instead, when the carriage 13 reaches the end of the frame, the table can slide yet further. Such an arrangement can allow yet larger tiles to be cut without increasing the size of the frame of the compact tile saw 10. The table can be locked to the center of the carriage by a lock button 57 for the cutting of small tiles. When the lock button is released, the above-identified further movement of the table is accomplished.

While a particular form of the invention has been illustrated and described, it will be apparent that various modifications can be made without departing from the spirit and scope of the invention. Accordingly, it is not intended that the invention be limited, except as by the appended claims.

For example, while specifically shaped rollers and rails have been disclosed, it is obvious that other configured

US 6,276,990 B1

5

rollers, wheels, etc., as well as rails associated therewith may be utilized. Thus, half-round grooves or ball bearing races may be used. Further, the rollers may be eccentrically mounted.

Additionally, the major support components such as frame, rails and carriage assembly may be fabricated of metal extrusions. In some instances light strength molded plastics will suffice.

While the rollers that support the carriage have been shown in one orientation, it is clear that the rollers that support the carriage may be mounted on the carriage as opposed to being mounted on the frame. In so doing the frame in effect becomes the rail member for the carriage to ride upon.

Finally, while the saw blade is shown as being mounted above the table, it may be mounted below the table and still utilize the unique combination of table and carriage cooperative assembly and action to obtain significant attributes of the invention.

What is claimed is:

1. A compact saw for cutting a workpiece, the compact saw comprising:
 - a frame having at least one side edge and at least one end edge; a roller mounted carriage assembly mounted for linear movement on said frame, a table roller mounted to said carriage assembly to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;
 - a support arm mounted adjacent to the side edge of the frame and projecting upwardly from the frame; and
 - a motor assembly mounted to the support arm, the motor assembly including a motor and a saw blade for cutting the workpiece.
2. The compact saw in accordance with claim 1 wherein spaced rollers are mounted on said frame and the side edges of said carriage assembly define a track means along which said carriage moves in linear fashion.
3. The compact saw in accordance with claim 2 wherein said table has spaced rollers and is mounted for linear movement along said track means whereby said table may move linearly beyond the edges of said frame.
4. The compact saw in accordance with claim 3 wherein said rollers are mounted to spaced and opposed downwardly projecting portions of the undersurface of said table.
5. The compact saw in accordance with claim 4 wherein said spaced and opposed downwardly projecting portions co-act with the ends of said carriage assembly to limit the linear movement of said table with respect to said carriage assembly.
6. The compact saw in accordance with claim 5 wherein upwardly projecting frame portions support said spaced rollers mounted on said frame.
7. The compact saw in accordance with claim 6 wherein said upwardly projecting frame portions supporting said spaced rollers mounted on said frame form an abutment stop to limit the linear movement of said carriage assembly.
8. A compact saw for cutting a workpiece, comprising:
 - a frame having at least one side edge and at least one end edge;
 - a table roller mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;
 - a support arm mounted adjacent to the side edge of the frame and projecting upwardly from the frame;
 - a motor assembly mounted to the support arm, the motor assembly including a motor and a saw blade connected to the motor to cut the workpiece; and

6

a roller supported carriage assembly mounted between the frame and the table for rolling movement parallel to the edge of the frame for cutting of the workpiece such that the table is moveable to a predetermined position beyond the end of the frame, wherein the carriage assembly comprises:

- at least one guide rail mounted to the frame in a position parallel to the edge of the frame; and
 - at least one extension rail roller mounted to the guide rail and roller mounted to the table of the saw.
9. A saw support for cutting a workpiece; comprising:
 - a frame having at least one side edge and at least one end edge;
 - a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;
 - a motor assembly operatively supported by said frame including a motor and a saw blade connected to the motor to cut the workpiece; and
 - a free roller supported carriage assembly mounted directly on said frame and supporting said table for rolling movement parallel to the edge of the frame for cutting of the workpiece such that said table is moveable to a predetermined position beyond the end of the frame, said frame being open and formed by spaced, rigid members.
 10. The saw support in accordance with claim 9 wherein one of said carriage assembly and said frame defines a track member.
 11. A saw support for cutting a workpiece, comprising:
 - a frame having at least one side edge and at least one end edge;
 - a supported table roller mounted to a free rolling supported carriage assembly mounted on said frame, said table being adapted to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;
 - a motor assembly operatively supported by said frame including a motor and a saw blade connected to the motor to cut the workpiece; and
 - said free rolling carriage assembly being mounted for rolling movement parallel to the edge of the frame for cutting of the workpiece such that said table and free rolling carriage are moveable to a predetermined position beyond at least one end of said frame.
 12. A saw support for cutting a workpiece, comprising:
 - a frame having at least one side edge and at least one end edge;
 - a table mounted to the frame to support the workpiece thereon, the table having an upper surface aligned in a predetermined plane;
 - a motor assembly operatively supported by said frame including a motor and a saw blade connected to the motor to cut the workpiece;
 - a free rolling carriage assembly mounted between said frame and said table for rolling movement parallel to the edge of the frame for cutting the workpiece such that said table is moveable to a predetermined position beyond the end of the frame, said carriage assembly having at least one guide rail mounted to the frame in a position parallel to the edge of the frame and at least one extension rail rollerably mounted to the guide rail and roller mounted to said table.

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