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(54) **WOOD CUTTING MACHINE WITH A FINE ADJUSTMENT DEVICE**

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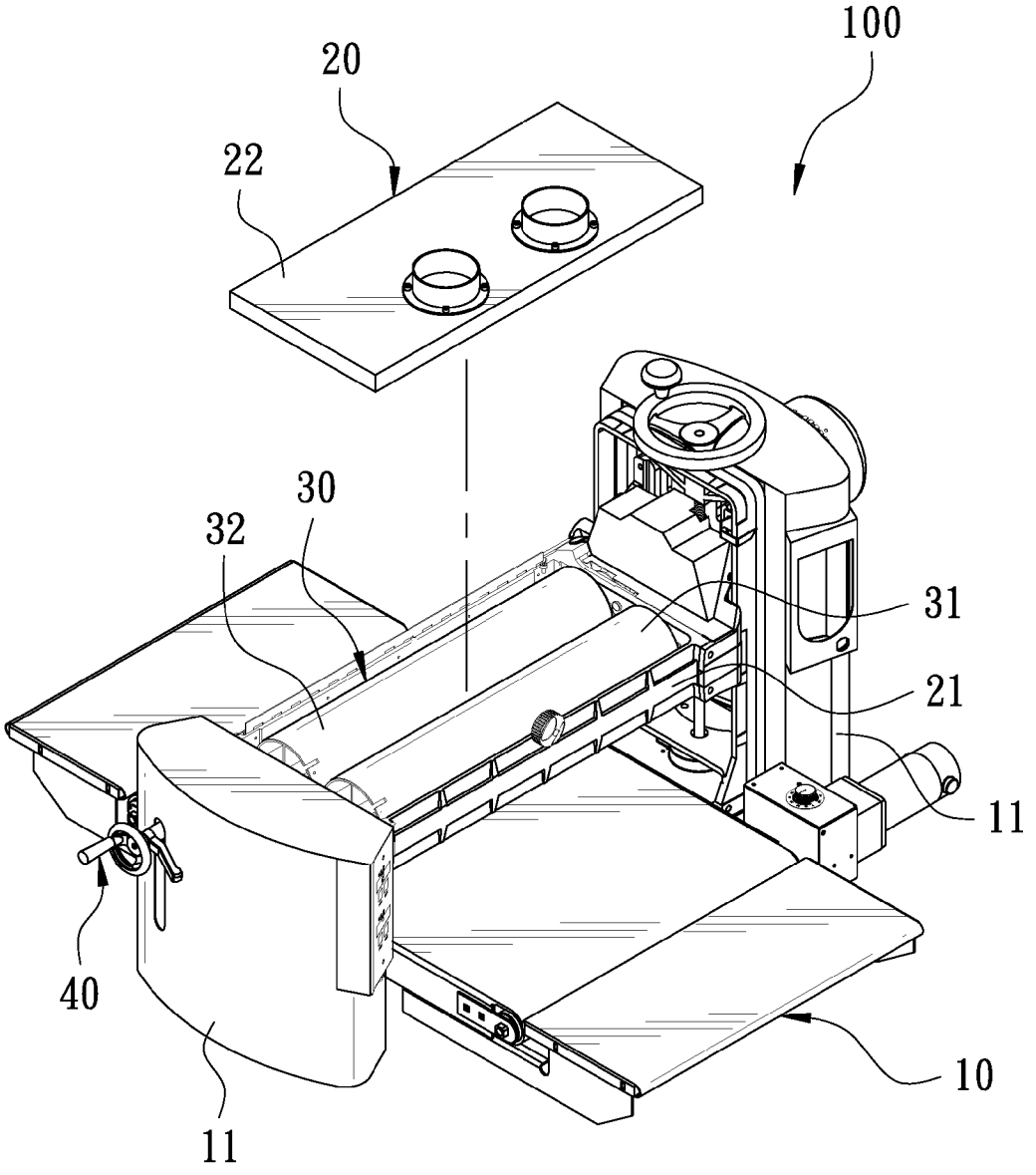
(57) **ABSTRACT**

A fine adjustment device is provided on a cutting wheel of a wood cutting machine. The fine adjustment device includes two lift units and a driving rod. The two lift units are disposed at two ends of the cutting wheel. The driving rod is axially disposed at one side of the cutting wheel and connected to the two lift units for driving the lift units to simultaneously move the two ends of the cutting wheel up or down, decreasing the height error of the two ends of the cutting wheel and enhancing the processing accuracy and grind quality.



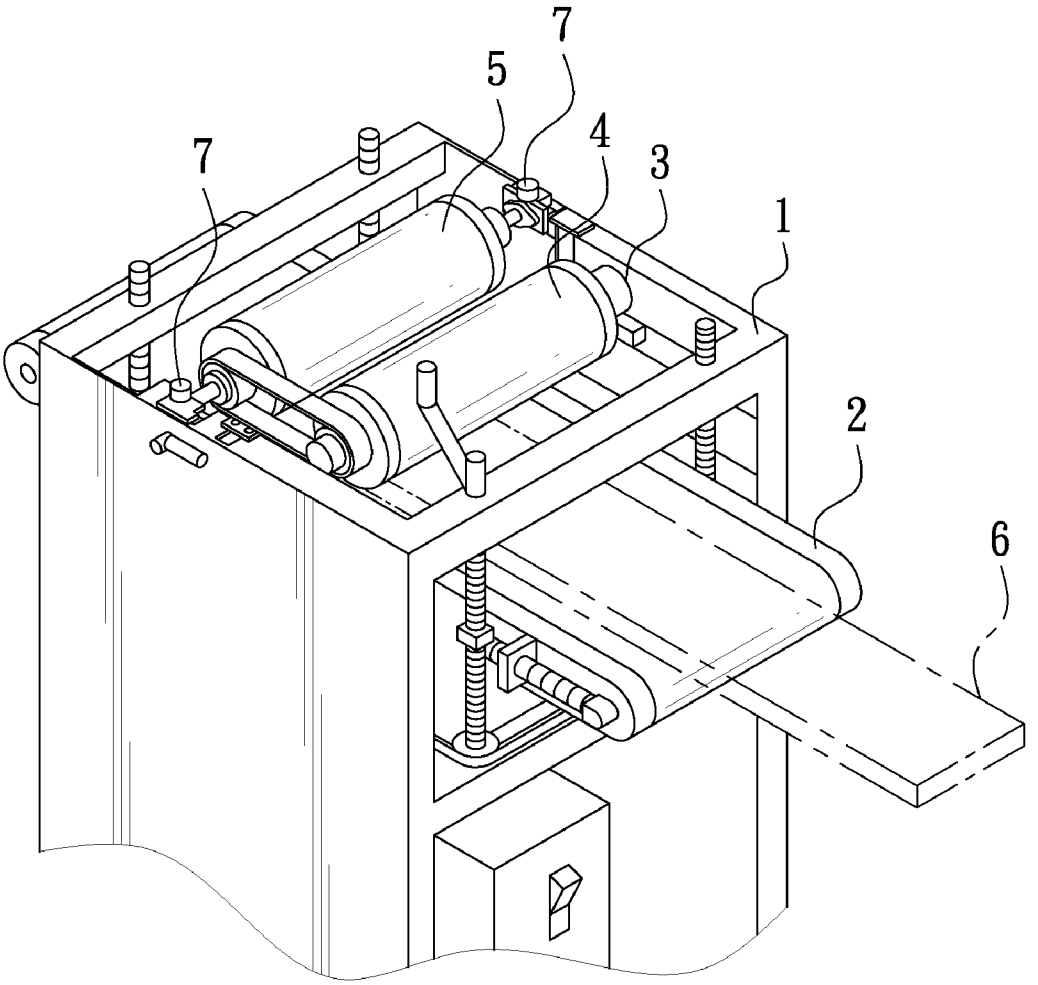


FIG. 1
PRIOR ART

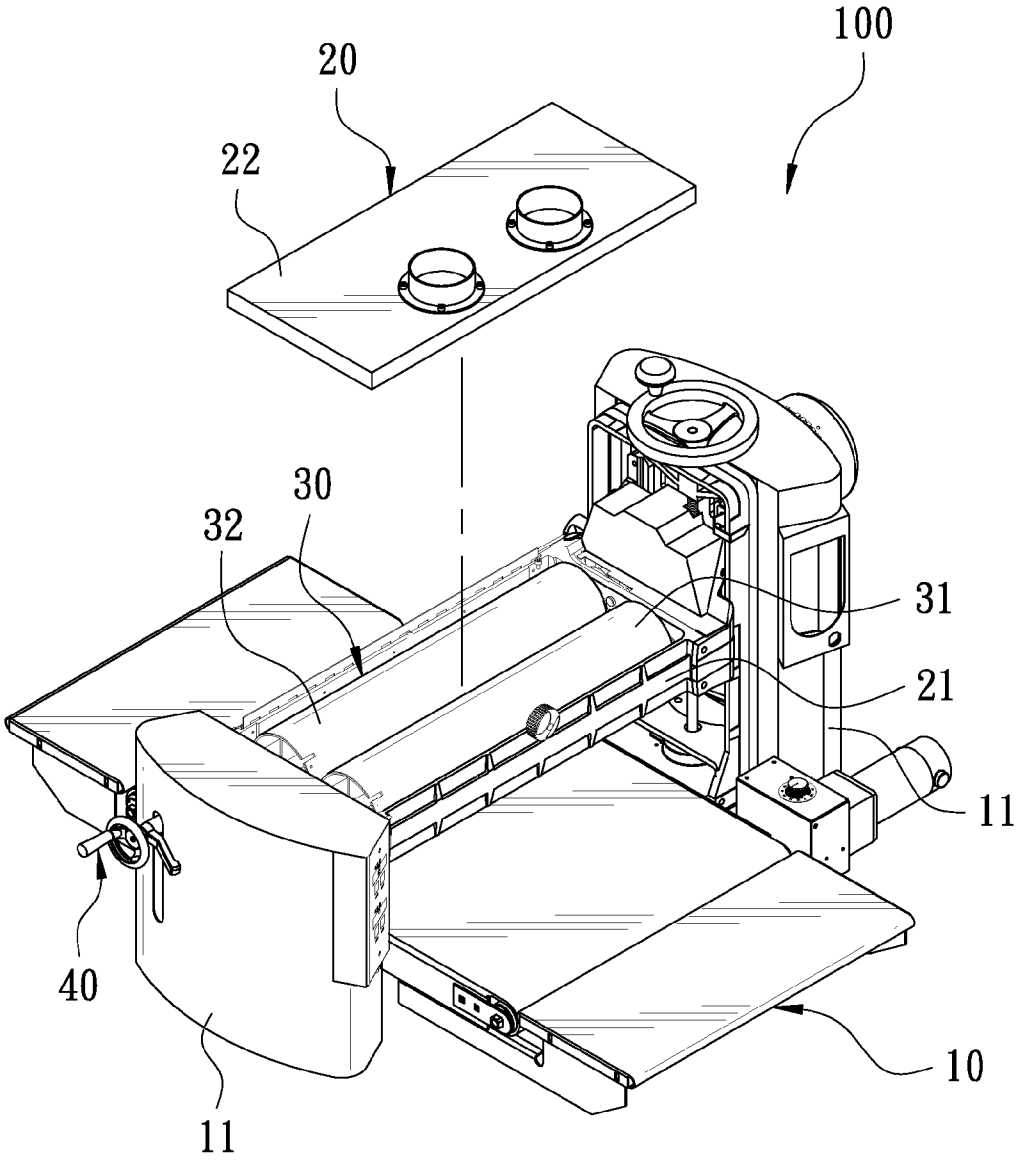


FIG. 2

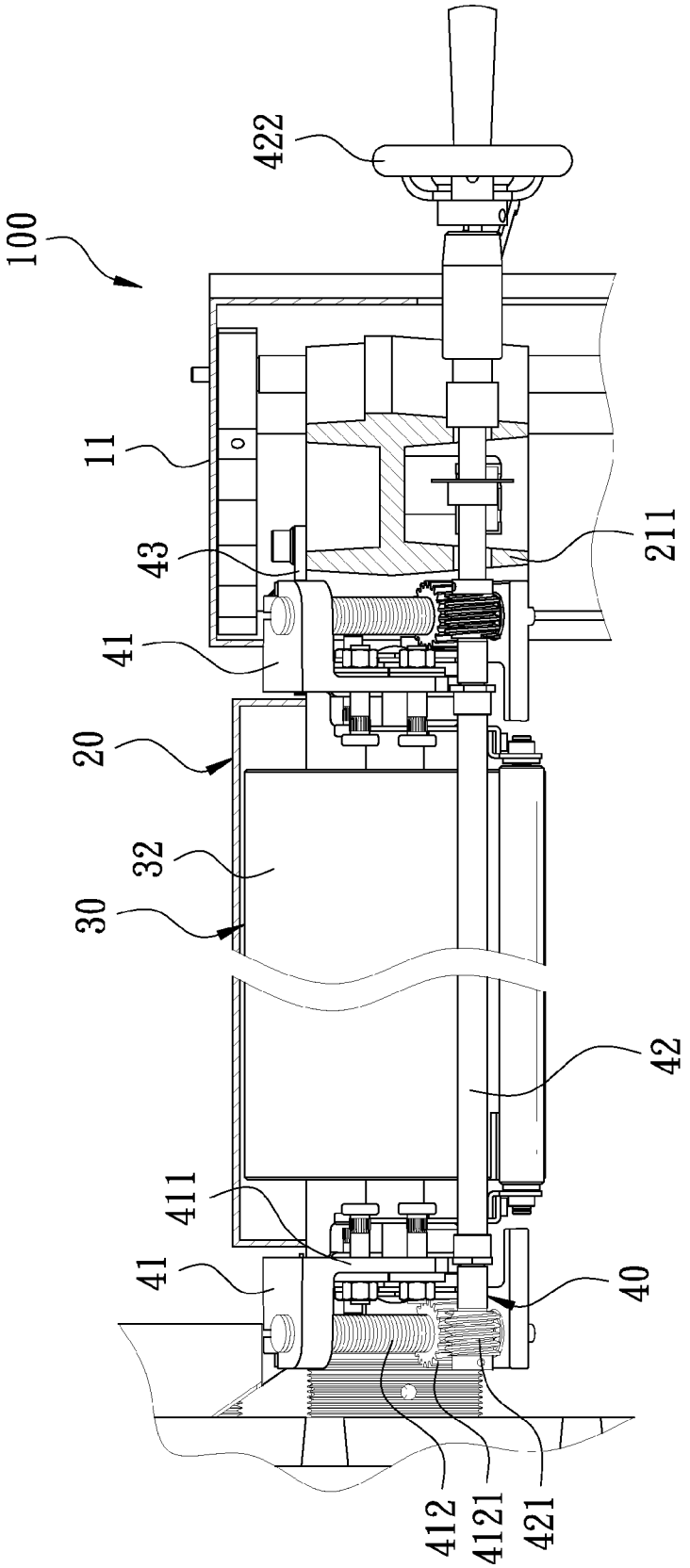


FIG. 3

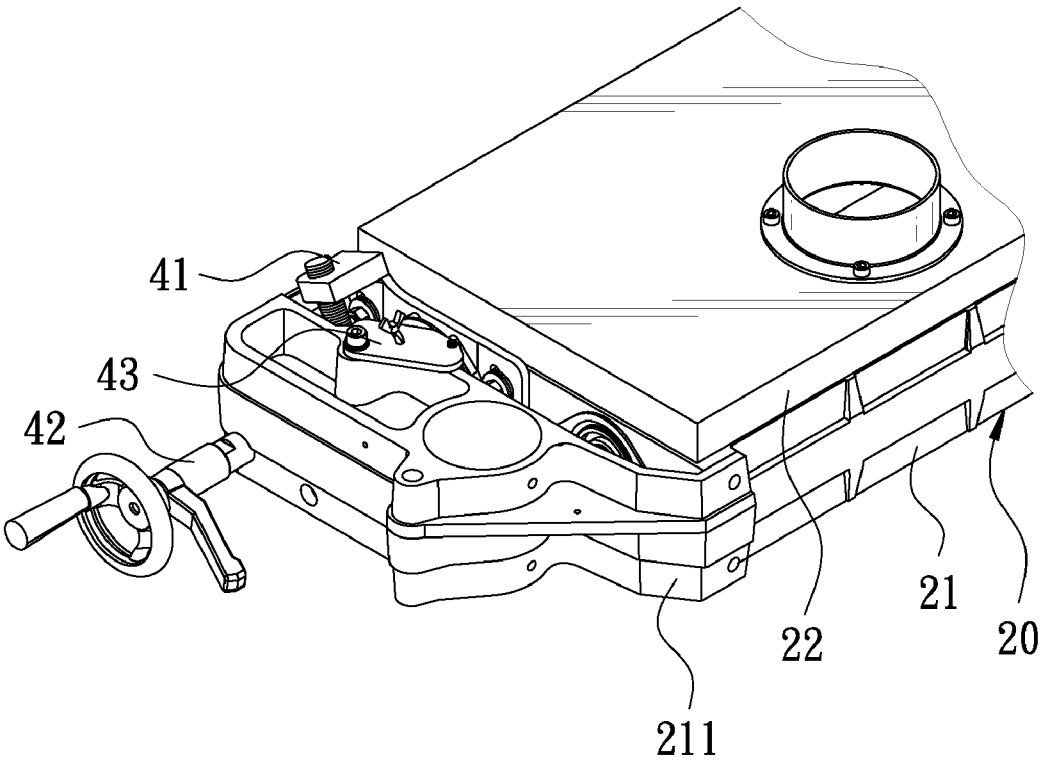


FIG. 4

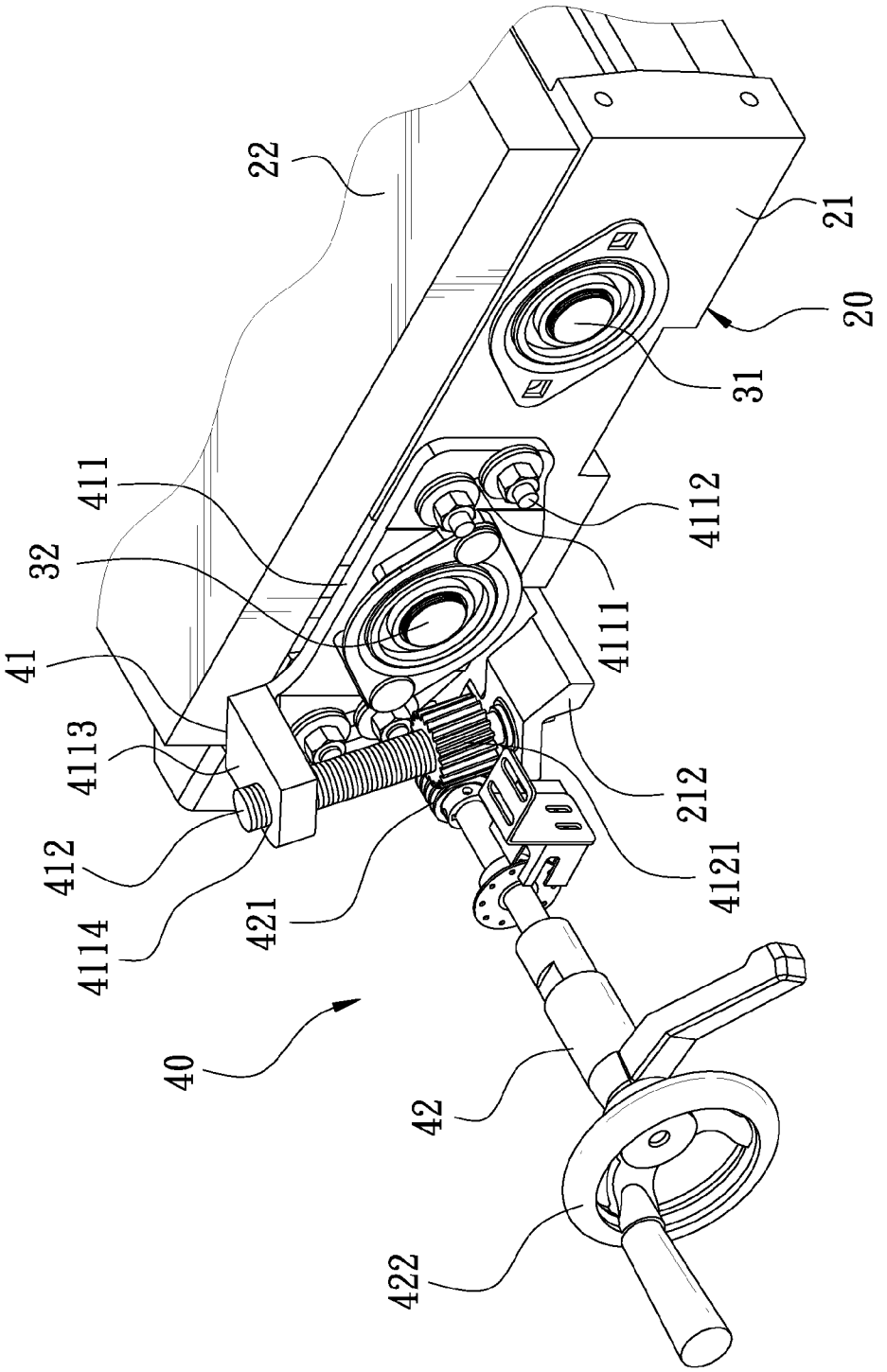

22
21
20
31
411
32
41
4113
412
4114
421
40
42
422
4112
4111
212
4121

FIG. 5

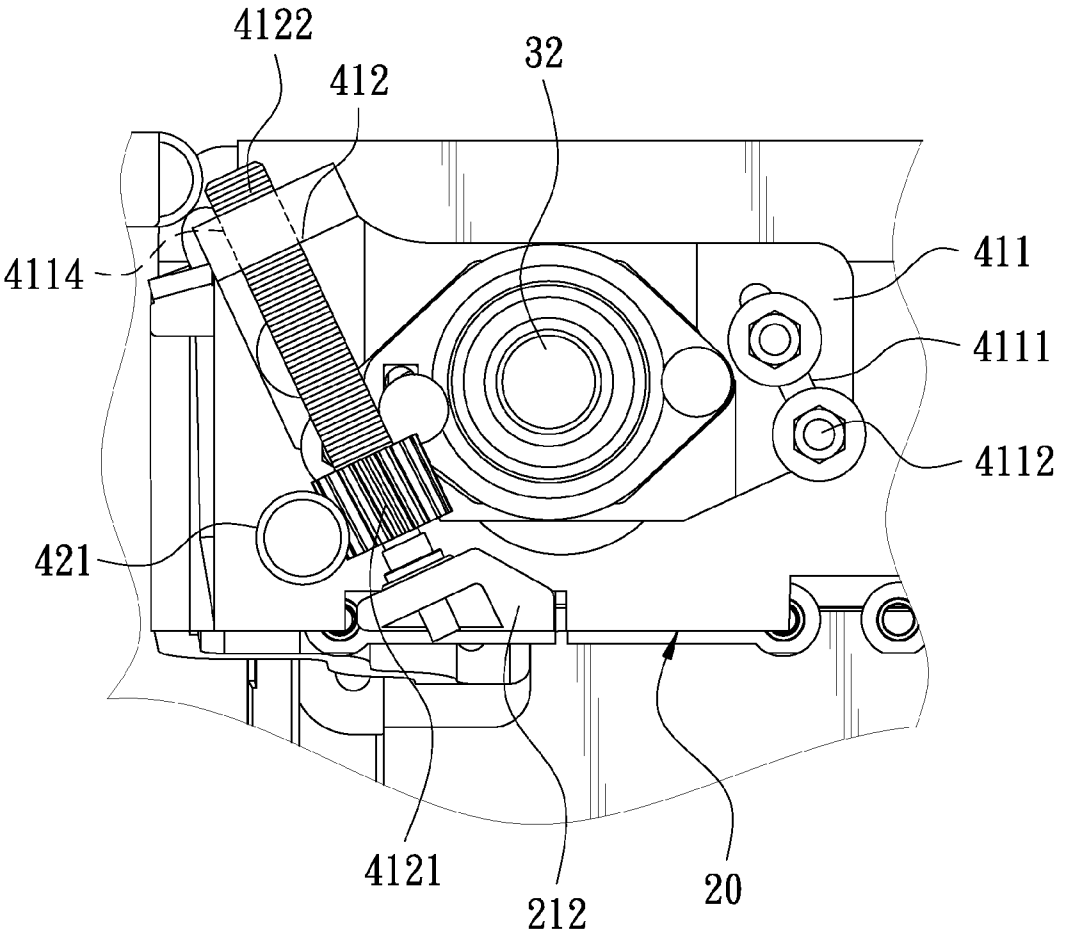


FIG. 6

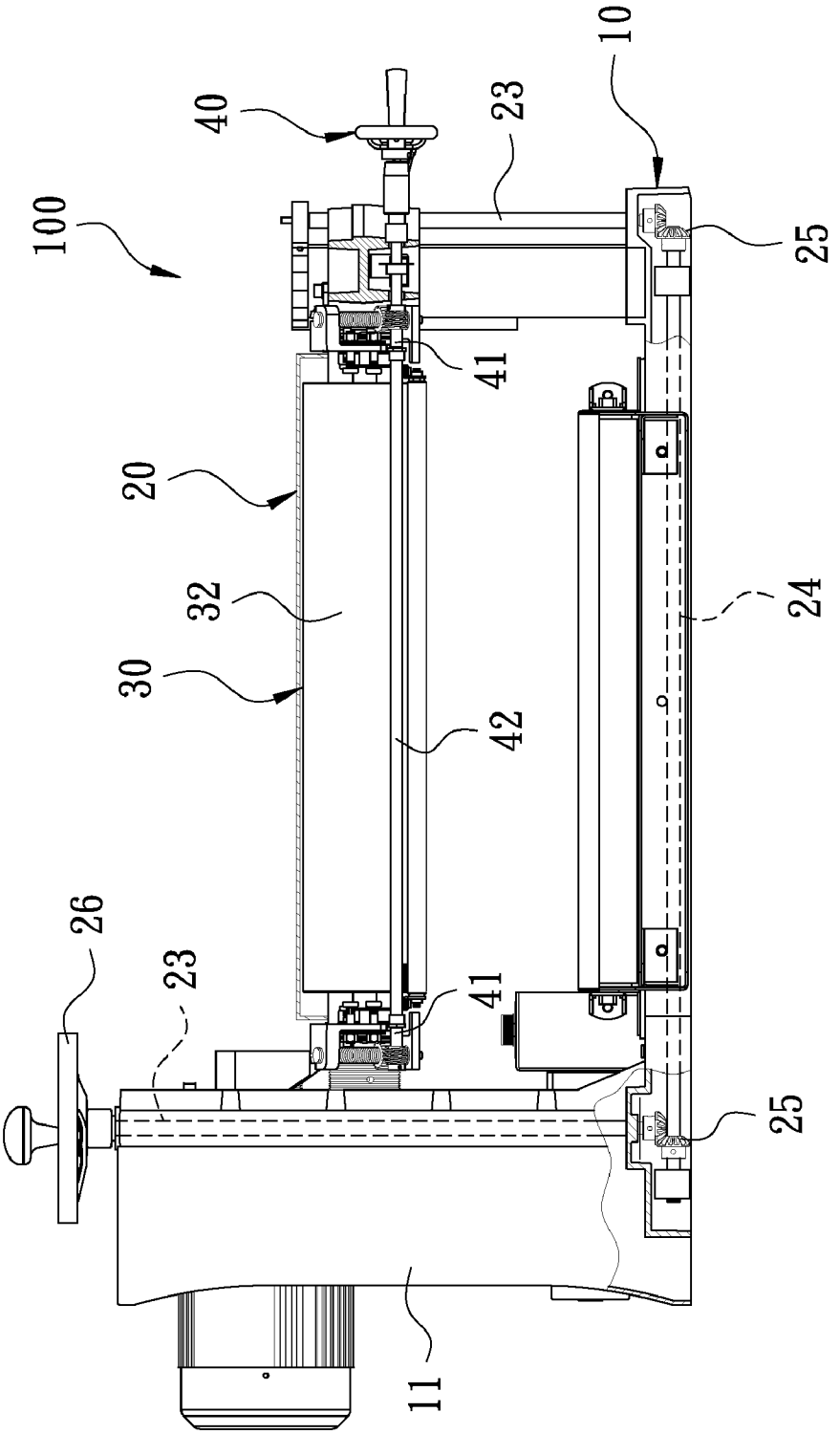


FIG. 7

WOOD CUTTING MACHINE WITH A FINE ADJUSTMENT DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a wood cutting machine with a fine adjustment device.

[0003] 2. Description of the Prior Art

[0004] As shown in FIG. **1**, a conventional wood cutting machine comprises a base **1**. The base **1** comprises a worktable **2** thereon. A cutting unit **3** is provided above the worktable **2**. The cutting unit **3** comprises a coarse abrasive wheel **4** and a fine abrasive wheel **5** to grind a workpiece **6**. The coarse abrasive wheel **4** of the conventional wood cutting machine is used for coarse grind of the workpiece **6**. The fine abrasive wheel **5** is used for fine grind of the workpiece **6**. The particle size of the coarse abrasive wheel **4** is greater than that of the fine abrasive wheel **5**, and the diameter of the fine abrasive wheel **5** is smaller than that of the coarse abrasive wheel **4**. Two ends of the fine abrasive wheel **5** are respectively provided with an adjustment device **7** to adjust the grind position of the fine abrasive wheel **5** relative to the coarse abrasive wheel **4**. Generally, the adjustment device **7** is composed of a screw and a slide block. The adjustment devices **7** at the two ends of the fine abrasive wheel **5** are separately operated to adjust the position of the fine abrasive wheel **5**. After several adjustments, the two ends of the fine abrasive wheel **5** may be not at the same height, which influences the grind effect of the workpiece **6**. Accordingly, the inventor of the present invention has devoted himself based on his many years of practical experiences to solve this problem.

SUMMARY OF THE INVENTION

[0005] The present invention is to provide a wood cutting machine with a fine adjustment device. The wood cutting machine comprises a worktable and a cutting unit located above the worktable. The cutting unit has a base. The base comprises at least one cutting wheel and the fine adjustment device thereon. The fine adjustment device comprises two lift units and a driving rod. The two lift units are disposed at two ends of the cutting wheel. The driving rod is axially disposed at one side of the cutting wheel and connected to the two lift units for driving the lift units to simultaneously move the two ends of the cutting wheel up or down. The present invention not only improves the height error of the conventional wood cutting machine but also enhances the processing accuracy and grind quality. With the fine adjustment device, the position of the cutting wheel can be adjusted quickly to increase the efficiency of processing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. **1** is a perspective view of a conventional wood cutting machine;

[0007] FIG. **2** is a partially exploded view according to a preferred embodiment of the present invention;

[0008] FIG. **3** is a partially cross-sectional view according to the preferred embodiment of the present invention;

[0009] FIG. **4** is a partially enlarged perspective view according to the preferred embodiment of the present invention;

[0010] FIG. **5** is a perspective view showing the fine adjustment device of the present invention;

[0011] FIG. **6** is a front view showing the fine adjustment device of the present invention; and

[0012] FIG. **7** is a schematic view showing another use of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings.

[0014] As shown in FIGS. **1** to **3**, a wood cutting machine **100** according to a preferred embodiment of the present invention comprises a worktable **10**. The worktable **10** comprises a pair of slide seats **11** at two sides thereof. A cutting unit **20** is provided between the pair of slide seats **11**. The cutting unit **20** comprises a hollow base **21**. As shown in FIG. **4**, the base **21** has a pair of connection seats **211** at two sides thereof. The connection seats **211** are slidably connected to the slide seats **11**. At least one cutting wheel **30** is provided in the base **21**. The cutting wheel **30** is a cutter wheel or an abrasive wheel. In this embodiment, there are two cutting wheels **30** in the base **21**. The two cutting wheels **30** are a coarse abrasive wheel **31** and a fine abrasive wheel **32**. An upper lid **22** is provided on the base **21**. A fine adjustment device **40** is provided on the base **21**. The fine adjustment device **40** comprises two lift units **41**, a driving rod **42**, and a return-to-zero plate **43**.

[0015] The two lift units **41** are disposed at two ends of the fine abrasive wheel **32**. Each lift unit **41** comprises a positioning plate **411** and a screw **412**. The positioning plate **411** is pivotally connected to one end of the fine abrasive wheel **32**. The positioning plate **411** has two slide slots **4111** disposed close to two ends of the positioning plate **411**. The positioning plate **411** is slidably connected to the base **21** of the cutting unit **20** through two bolts **4112**. The positioning plate **411** has a connection block **4113** protruding from an upper end thereof. The connection block **4113** has a threaded hole **4114**. The base **21** has an extension block **212** corresponding to the connection block **4113**. One end of the screw **412** is screwed to the threaded hole **4114**, while another end of the screw **412** is provided with a worm gear **4121** and pivotally connected to the extension block **212** of the base **21**. The screw **412** is parallel to the slide slot **4111** of the positioning plate **411**.

[0016] The driving rod **42** is axially disposed at one side of the fine abrasive wheel **32**, opposite to the coarse abrasive wheel **31**. The driving rod **42** has a threaded section **421** adjacent to the lift unit **41** to mesh with the worm gear **4121** of the lift unit **41**. One end of the driving rod **42** is connected with a hand wheel **422**.

[0017] The return-to-zero plate **43**, as shown in FIG. **4**, is pivotally connected to the connection seat **211** of the base **21** and located close to the positioning plate **411**.

[0018] FIG. **6** is a front view showing the fine adjustment device of the present invention. When the user wants to adjust the position of the fine abrasive wheel **32** relative to the coarse abrasive wheel **31**, the user can turn the hand wheel **422** to drive the driving rod **42** and link the screws **412** of the lift units **41** at the two ends of the fine abrasive wheel **32** to turn. Because one end of the screw **412**, opposite to the threaded hole **4114**, is pivotally connected to the extension block **212** of the base **21**, the screw **412** will be moved in the threaded hole **4114**. The positioning plate **411** is guided by the slide slot **4111** to move the fine abrasive wheel **32** up or down simultaneously. Thus, the present invention not only

improves the height error of the conventional wood cutting machine but also enhances the processing accuracy and grind quality. The position of the fine abrasive wheel **32** can be adjusted quickly to increase the efficiency of processing. Besides, with the return-to-zero plate **43**, the present invention provides a quick positioning effect to assist the fine abrasive wheel **32** in returning to zero.

[0019] FIG. **7** is a schematic view showing another use of the present invention. The cutting unit **20** of the wood cutting machine **100** is slidably connected above the worktable **10**, and its position must be adjusted according to the thickness of a processing plank. As shown in FIG. **7**, two ends of the cutting unit **20** are connected with screws **23**, respectively. A transmission rod **24** is provided under the worktable **10**. A bevel gear **25** is provided between the screw **23** and the transmission rod **24** to connect with the screw **23** and the transmission rod **24**. One of the screws **23** is connected with a hand wheel **26**. The user can turn the hand wheel **26** to drive the cutting unit **20** to move up or down relative to the worktable **10**, achieving the same effect of the preferred embodiment of the present invention so as to enhance the processing quality.

[0020] Although particular embodiments of the present invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the present invention. Accordingly, the present invention is not to be limited except as by the appended claims.

What is claimed is:

1. A wood cutting machine with a fine adjustment device, the wood cutting machine comprising a worktable and a cutting unit located above the worktable, the cutting unit having a base, the base comprising at least one cutting wheel and the fine adjustment device thereon, the fine adjustment device comprising:

two lift units disposed at two ends of the cutting wheel; and

a driving rod axially disposed at one side of the cutting wheel and connected to the two lift units for driving the lift units to simultaneously move the two ends of the cutting wheel up or down.

2. The wood cutting machine with a fine adjustment device as claimed in claim **1**, wherein the cutting wheel is a cutter wheel.

3. The wood cutting machine with a fine adjustment device as claimed in claim **1**, wherein the cutting wheel is an abrasive wheel.

4. The wood cutting machine with a fine adjustment device as claimed in claim **1**, wherein the driving rod has a threaded section adjacent to each of the lift units, each of lift units comprising a positioning plate and a screw, the positioning plate being pivotally connected to one end of the cutting wheel, the positioning plate having a connection block protruding from an upper end thereof, the connection block having a threaded hole, one end of the screw being screwed to the threaded hole, another end of the screw being provided with a worm gear and pivotally connected to the base, the worm gear meshing with the threaded section of the driving rod, the driving rod driving the screw to move the positioning plate and link the cutting wheel to move up or down.

5. The wood cutting machine with a fine adjustment device as claimed in claim **4**, wherein the fine adjustment device further comprises a return-to-zero plate, the return-to-zero plate being pivotally connected to the base and located close to the positioning plate.

6. The wood cutting machine with a fine adjustment device as claimed in claim **1**, wherein one end of the driving rod is connected with a hand wheel.

7. The wood cutting machine with a fine adjustment device as claimed in claim **1**, wherein each of the two ends of the cutting unit is connected with a screw, a transmission rod being provided under the worktable, a bevel gear being provided between the screw and the transmission rod to connect with the screw and the transmission rod.

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