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(54) **ADAPTER FOR CUTTING TOOTH**

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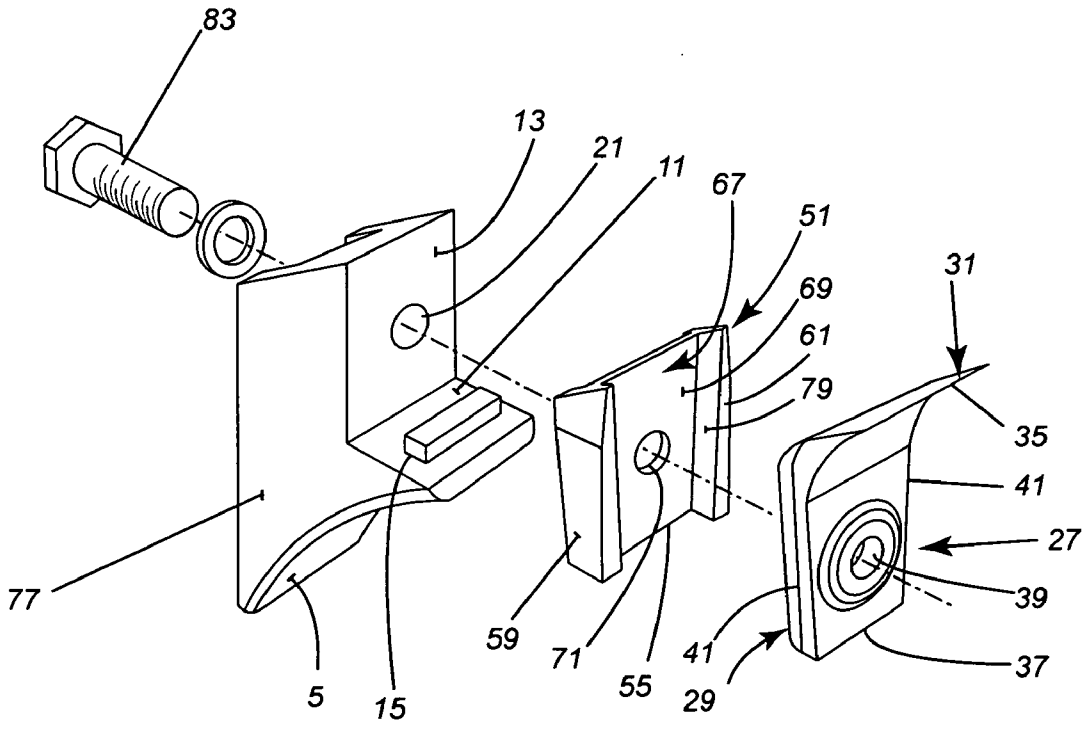
(57) **ABSTRACT**

An adapter for use in mounting a cutting tooth onto a mounting block. The adapter has two opposed sides with a first groove on one side for receiving a leading portion of the mounting block and a second groove on the other side opposite the one side for receiving a portion of the cutting tooth. The first and second grooves are aligned. The adapter has a fastening hole there through in the grooves, the hole transverse to the sides of the adapter. The fastening hole is used in fastening the tooth to the mounting block with the adapter sandwiched between the tooth and mounting block.



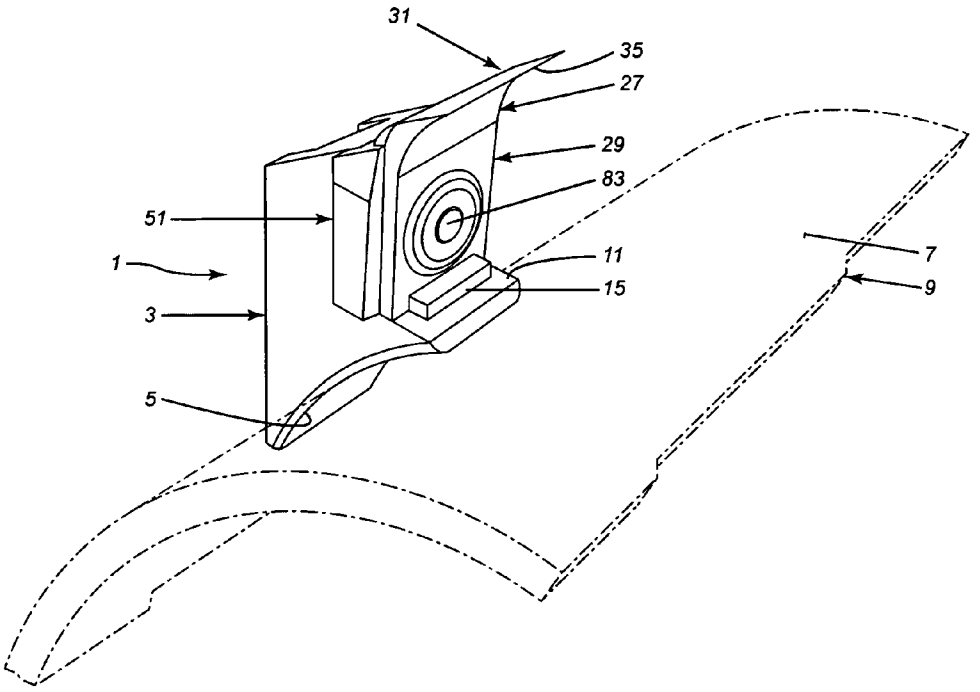

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FIG. 1

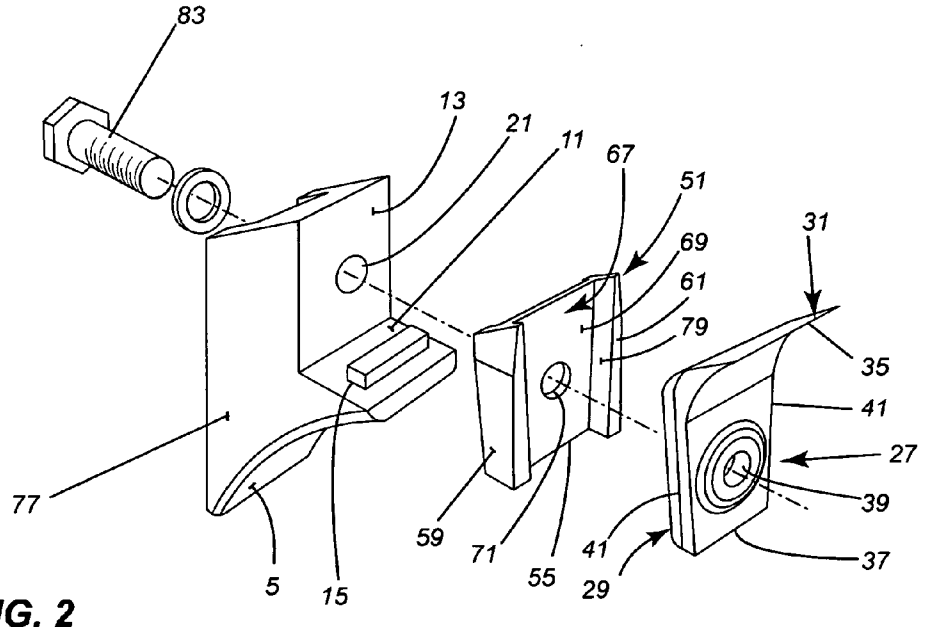
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FIG. 2

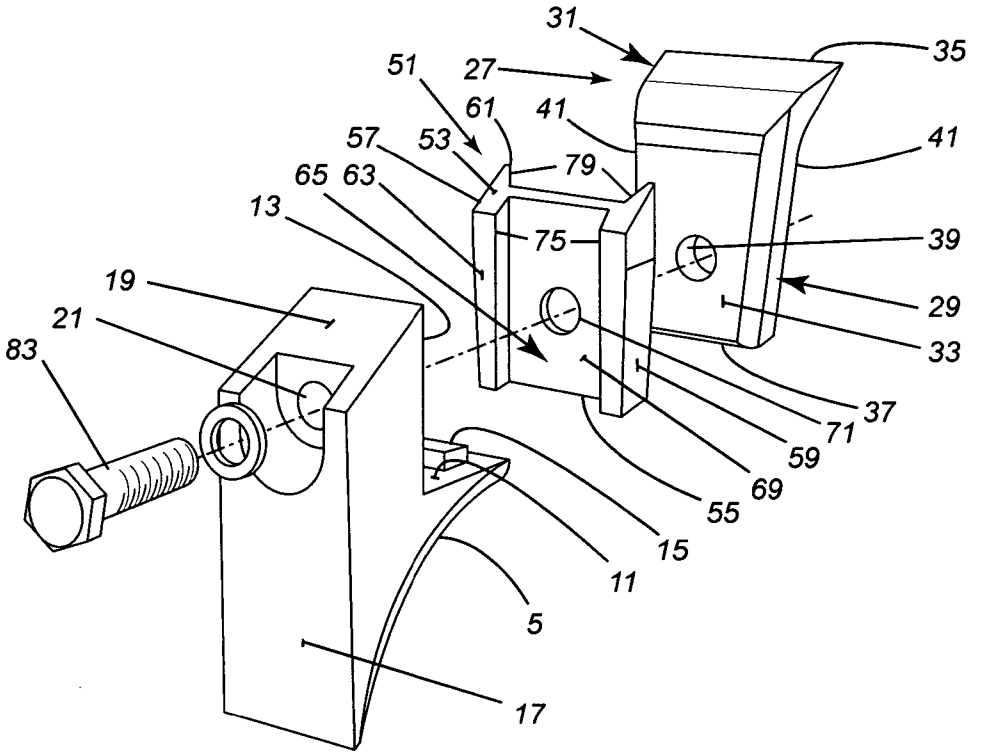
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FIG. 3

ADAPTER FOR CUTTING TOOTH

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] This invention is directed toward an adapter for use in mounting a cutting tooth used on a rotating cutting head. The invention is also directed toward a cutting tooth mounting assembly for use on a rotating cutting head.

[0003] 2. Background Art

[0004] Rotating cutting heads, such as heads on brush cutters, have a plurality of cutting teeth mounted over the surface of the head. Each tooth is detachably mounted on a mounting block which block in turn is fixedly mounted on the surface of the cylindrical head of the cutter. The tooth is normally fixed by a bolt directly to the block so it can be easily replaced if damaged or broken. The cutting heads often operate in an environment where rocks or boulders are present and these rocks or boulders are frequently hit by the cutting head. These hits can severely damage the cutting teeth and/or the mounting blocks on the head. The damaged teeth are relatively expensive to replace and the mounting blocks, if damaged, are even more expensive to replace since they are normally welded onto the drum.

SUMMARY OF THE INVENTION

[0005] It is the purpose of the present invention to provide an adapter which can be mounted between the tooth and the mounting block when mounting the tooth on the block. The adapter is relatively inexpensive and is made of material allowing it to deform more readily than the tooth or block if the assembly strikes a rock or similar hard object. If a rock is struck, it is more likely that the softer adapter will be damaged or deformed rather than the harder tooth or mounting block and the inexpensive adapter can be readily replaced.

[0006] It is another purpose of the present invention to provide a tooth mounting The front side **13** of the mounting block **3** is located within the first groove **65** of the adapter **51** against the web **69**. The cutting tooth **27** is then mounted on the front of the adapter **51** with the side walls **79** of the second groove **67** adjacent the sides **41** of the tooth **27** when the tooth is mounted in the second groove **67**. The back **33** of the mounting portion **29** of the tooth is against the web **69**. The bottom end edge **35** of the tooth **27** rests on the step **11** to align its hole **39** with the other holes **71**, **21**. Both the adapter **51** and the tooth **27** are located between the stop rib **15** on the step **11** of the block **3** and the front side **13** of the block.

[0007] In the assembled mounting, a bolt **83** is passed from the block through the aligned holes and into the threaded hole **55** on the tooth to securely join the adapter and tooth onto the block. When the tooth **27** is mounted on the block **3**, via the adapter **51**, the cutting portion **31** of the tooth extends slightly above the block and the adapter. The adapter **51** aligns the tooth **27** with the front side **13** of the mounting block.

[0008] The adapter **51** is made of slightly softer material than the material the tooth **27** and mounting block **3** are made of. The adapter **51** can be made of 44W, ASTM-A36, AISI 4140 or C-1020 steel having a hardness of between 25-35 RC. The tooth **27** is normally made of A2, A8 or 5160 steel heat treated to a hardness of 45-47 RC. The block **3** is made of high carbon steel such as Scandia High-Tuff or Scandia 100 having a hardness of 40-42 RC.

[0009] If the assembled mounting on the cutter head hits a rock or boulder during operation of the head, the softer adapter will often deform before the tooth or the block are damaged. The cutting tooth may be slightly displaced when the adapter is deformed but would still be operational though not as efficiently. The deformed adapter can be easily replaced. The replacement adapter correctly realigns the cutting tooth with the mounting block for maximum efficiency. The adapters are relatively inexpensive compared to the teeth or the block so considerable savings can be achieved by the using the adapters without lowering the efficiency of the machine. assembly for mounting cutting teeth on a cutter head which mounting assembly reduces damage to the teeth and blocks during operation and reduces the operating cost of the machine. The mounting assembly has a mounting block fixedly mountable on the cylindrical surface of a brush cutter drum, the mounting block having a front side. A thin adapter is detachably mounted on the front side of the block and a cutting tooth is detachably mounted against the adapter, the adapter aligning the tooth with the front side of the block. The tooth is fastened to the block with a bolt, the bolt passing through the adapter.

[0010] The adapter is formed on one side to securely fit on the front of the mounting block over its front side and on its other side to securely position the tooth so it is aligned with the front side of the block adjacent to but not against the front side of the block. The adapter, made of softer material than the cutting tooth or the block, is more likely to be damaged than the tooth or the block if the tooth hits something during operation of the machine. The adapter is however easily replaced if damaged.

[0011] The invention is particularly directed toward an adapter for use in mounting a cutting tooth onto a mounting block. The adapter has two opposed sides with a first groove on one side for receiving a leading portion of the mounting block and a second groove on the other side opposite the one side for receiving a portion of the cutting tooth. The first and second grooves are aligned. The adapter has a fastening hole there through in the grooves, the hole transverse to the sides, for use in fastening the tooth to the mounting block with the adapter sandwiched between.

[0012] The invention is also directed toward a cutting tooth mounting assembly for a cutter having a cylindrical cutting head. The mounting assembly has a mounting block with a bottom side for mounting against the surface of the cutting head and a front side. The mounting assembly includes a plate-like cutting tooth having a mounting portion with a flat side and a cutting portion bent from one end of the mounting portion terminating in a cutting edge. The mounting assembly also has an adapter with two opposed sides, the adapter having a first groove on one side adapted to snugly receive a front portion of the block with the front side of the block against the bottom of the first groove. The adapter has a second groove on the other side opposite the one side to snugly receive part of the mounting portion of the tooth with its flat side against the bottom of the groove. The grooves are aligned to align the flat side of the tooth with the front side of the block. A mounting bolt passing through the adapter holds the tooth securely against the adapter and the adapter securely against the mounting block.

DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0013] FIG. **1** is a perspective view of the mounting assembly;

[0014] FIG. **2** is an exploded perspective view of the mounting assembly looking at it from the front; and

[0015] FIG. **3** is an exploded perspective view of the mounting assembly looking at it from the back.

DETAILED DESCRIPTION OF THE INVENTION

[0016] The mounting assembly **1** of the present invention, as shown in FIGS. **1**, **2** and **3**, includes a mounting block **3** having a bottom side **5**, slightly concave, by means of which it is attached to the surface **7** of a cylindrical, rotatable, cutter head **9**. The mounting block **3** is attached, usually by welding, to the surface **7** to be transverse to the longitudinal, rotational axis of the cylindrical head **9**. The mounting block **3** has a step **11** just above the front of the bottom side **5** and a front side **13** extending up from the step **11**. A stop rib **15** can extend up from the step **11**, spaced from the front side **13** and parallel to it. The block has a back side **17** extending up from the rear of the bottom side **5**. The back side **17** can be parallel to the front side **13**. A top side **19**, which angles upwardly, joins the top of back side **17** to the top of the front side **13**. A bolt hole **21** extends through the block from the back side **17** to about the center of the front side **13**. When the block **3** is mounted on the cutter head **9**, the front side **13** is normally angled forwardly.

[0017] The mounting assembly **1** includes a plate-like cutting tooth **27** having a straight, lower mounting portion **29** and an upper cutting portion **31** bent from one end of the mounting portion **29**. The back **33** of the mounting portion **29** is flat. The free end of the cutting portion **31** terminates in a cutting edge **35**. The free end of the mounting portion **29** terminates in a straight end edge **37**. The tooth **27** preferably tapers in width from the cutting edge **35** to the end edge **37**. A threaded mounting hole **39** extends through the mounting portion **29**, the hole **39** centered between the sides **41** of the tooth **27** and slightly closer to the end edge **37** than to the cutting portion **31**.

[0018] The mounting assembly **1** also includes a thin, generally rectangular, adapter **51** adapted to be placed between the tooth **27** and the mounting block **3** when the tooth is mounted on the block. The adapter **51** has top and bottom ends **53**, **55**, sides **57**, **59** and front and back faces **61**, **63**. The top end **53** can be angled down from the front face **61** to the back face **63**, and the lower portion of the sides **57**, **59** can taper inwardly if desired. The back face **63** has a shallow first mounting groove **65** extending between the top and bottom ends **53**, **55** sized and shaped to snugly receive the front portion of the mounting block **3**. A shallow, second mounting groove **67** on the front face **61** extends between the top and bottom ends **53**, **55** sized and shaped to snugly receive the mounting portion **29** of the tooth **27**. A relatively thin web **69** separates the two mounting grooves **65**, **67**. A mounting hole **71** extends through the web **69**. The mounting grooves **65**, **67** are aligned and are nearly as wide as the front and back faces **61**, **63** of the adapter.

[0019] To assemble the mounting assembly **1**, the mounting block **3** is welded to the surface of the cutter head via its bottom side **5**. The adapter **51** is placed on the front portion of the mounting block **3** with the side walls **75** of the first groove **65** adjacent the sides **77** of the mounting block **3**. The bottom end **55** of the adapter **51** rests on the step **11** to align the hole **71** in the adapter with the hole **21** in the block **3**.

1. An adapter for use in mounting a cutting tooth onto a mounting block, the adapter having two opposed sides with a first groove on one side for receiving a leading portion of the mounting block and a second groove on the other side opposite the one side for receiving a portion of the cutting tooth, the first and second grooves aligned; the adapter having a fastening hole there through in the grooves, the hole transverse to the sides, for use in fastening the tooth to the mounting block with the adapter sandwiched between.

2. An adapter as claimed in claim **1** wherein the adapter has opposed top and bottom ends, the grooves extending over the length of the adapter between its ends.

3. An adapter as claimed in claim **2** wherein the second groove tapers from the top end to the bottom end.

4. An adapter as claimed in claim **1** wherein the adapter is made of steel having a hardness ranging between 25 and 35 RC.

5. An adapter as claimed in claim **2** wherein the adapter is made of steel having a hardness ranging between 25 and 35 RC.

6. An adapter as claimed in claim **3** wherein the adapter is made of steel having a hardness ranging between 25 and 35 RC.

7. A cutting tooth mounting assembly for a cutter having a cylindrical cutting head, the assembly having a mounting block with a bottom side for mounting against the surface of the cutting head and a front side; a plate-like cutting tooth having a mounting portion with a flat side and a cutting portion bent from one end of the mounting portion terminating in a cutting edge; an adapter having two opposed sides with a first groove on one side adapted to snugly receive a front portion of the block with the front side of the block against the bottom of the first groove and a second groove on the other side opposite the one side to snugly receive part of the mounting portion of the tooth with its flat side against the bottom of the second shallow groove; the grooves aligned to align the flat side of the tooth with the front side of the block; and a mounting bolt holding the tooth securely against the adapter and the adapter securely against the mounting block.

8. A mounting assembly as claimed in claim **7** wherein the block has a step extending forwardly from the bottom of the front side of the block toward the front of the bottom side, the mounting portion of the cutting tooth, and the adapter, resting on the step.

9. A mounting assembly as claimed in claim **8** wherein there is a stop on the step spaced from the front side of the block, the mounting portion of the cutting tooth and the adapter snug between the stop and the front side of the block.

10. A mounting assembly as claimed in claim **7** wherein the adapter has opposed top and bottom ends, the grooves extending over the length of the adapter between its ends.

11. A mounting assembly as claimed in claim **8** wherein the adapter has opposed top and bottom ends, the grooves extending over the length of the adapter between its ends.

12. A mounting assembly as claimed in claim **7** wherein the width of the tooth tapers from its cutting edge to its other end and the second groove in the adapter also tapers from the top to the bottom.

13. A mounting assembly as claimed in claim **8** wherein the width of the tooth tapers from its cutting edge to its other end and the second shallow groove in the adapter also tapers from the top to the bottom.

14. A mounting assembly as claimed in claim **7** wherein the hardness of the adapter is substantially less than the hardness of the mounting block and the cutting tooth.

15. A mounting assembly as claimed in claim **8** wherein the hardness of the adapter is substantially less than the hardness of the mounting block and the cutting tooth.

16. A mounting assembly as claimed in claim **7** wherein the hardness of the adapter is between 25 and 35 RC; the hardness of the cutting tooth is between 45 and 47 RC and the hardness of the mounting block is between 40 and 42 RC.

17. A mounting assembly as claimed in claim **8** wherein the hardness of the adapter is between 25 and 35 RC; the hardness of the cutting tooth is between 45 and 47 RC and the hardness of the mounting block is between 40 and 42 RC.

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