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### Riding Lawn Mower Lawn Trimmer Attachment

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#### Abstract

The current invention is a Riding Lawn Mower Lawn Trimmer Attachment that can be efficiently attached to at any riding deck. It can also trim at an angle. The current invention has a trimmer which has a trimmer guard, an extender rod, and an adjustable angle bar to control the angle of the trim heads. Trim heads, trim cords, a drive system which in the preferred embodiment is a pulley system attached to the mower drive pulley, a support and a hinged connection to the lawn mower.

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#### Background/Summary

##### TECHNICAL FIELD

[0001] The technology discussed below relates a Lawn Trimmer and more particularly one attaches to a riding lawn mower.

## RELATED APPLICATIONS

[0002] None.

## BACKGROUND

[0003] Many times homeowners or landscapers need to maintain their property by periodically cutting or trimming vegetation, such as grass, weeds, flowers and small plants that cannot be reached by a riding lawnmower or zero turn. There is a desire to save time by not stopping mowing, turn off the mower and get a weed trimmer. Sometimes this vegetation is an angle that is not flat so the weed trimmer would need to be placed at an angle.

[0004] There is still room for improvement in the art.

## SUMMARY

[0005] The current invention is a non-electric Riding Lawn Mower Lawn Trimmer Attachment that can be efficiently attached to at any riding deck. It can also trim at an angle. The current invention has a trimmer which has a trimmer guard, an extender rod, and an adjustable angle bar to control the angle of the trim. Trim heads, trim cords, a drive system which in the preferred embodiment is a pulley system attached to the mower drive pulley, a support and a hinged connection to the lawn mower.

[0006] These are improvements over the current art.

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## Description

### DRAWINGS

[0007] FIG. 1 shows the system attached to a lawn mower;

[0008] FIG. 2 shows under the trimmer guard;

[0009] FIG. 3 displays another view of under the trimmer guard;

[0010] FIG. 4 shows the support and its hinged connection to the lawn mower;

[0011] FIG. 5 shows the trimmer in the non-use position;

[0012] FIG. 6 shows the extender rod;

[0013] FIG. 7 show the trimmer in the position for usage;

[0014] FIG. 8 shows a front view of the trimmer;

[0015] FIG. 9 shows a top view of the trimmer;

[0016] FIG. 10 shows the pulley driving system;

[0017] FIG. 11 shows the support from a side view;

[0018] FIG. 12 shows the adjustable height bracket;

[0019] FIG. 13 shows the trim card angle adjuster;

[0020] FIG. 14 shows another view of the pulley system;

[0021] FIG. 15 shows the components of the pulley system including the coupler; and

[0022] FIG. 16 shows the guard and bolt; and

[0023] FIG. 17 shows a crosscut of the extender.

### MAIN COMPONENTS

[0024] **1** Device [0025] **10** Trimmer Safety Guard [0026] **15** Auto Deflector [0027] **17** Release Mechanism [0028] **20** Extender [0029] **25** Extender nut [0030] **30** trim string [0031] **35** trim string holder [0032] **40** angle bar [0033] **45** angle adjuster [0034] **50** driver system [0035] **55** drive shaft coupler [0036] **56** drive shaft washer [0037] **60** trimmer cross guard support [0038] **61** trimmer bar [0039] **62** upper trimmer support bracket [0040] **65** belt adjuster [0041] **66** bracket height adjuster [0042] **67** lower trimmer support bracket [0043] **70** trimmer belt guide pulley [0044] **75** trimmer driver pulley [0045] **77** belt guard [0046] **80** support hinge [0047] **81** support hinge bolt [0048] **88** trimmer cable [0049] **90** driver belt [0050] **95** belt guide [0051] **100** lawn mower [0052] **110** lawn mower pulley system [0053] **115** lawn mower drive belt [0054] **120** lawn mower pulley [0055] **130** return spring [0056] **160** cross bracket [0057] **210** Drive Shaft bolt [0058] **500** Guard [0059] **510**

## DETAILED DESCRIPTION

[0060] The illustrations presented herein are, in some instances, not actual views of any particular framing devices or components thereof but may be idealized representations which are employed to describe the present disclosure. Additionally, elements common between figures may retain the same numerical designation.

[0061] The current invention is a lawn trimmer attachment for a riding lawn mower as shown in FIGS. 1 through 17.

[0062] FIGS. 1 through 17 show a Riding Lawn Mower Lawn Trimmer **1** that can be efficiently attached to at any riding deck or can come with the riding deck. It can also trim at an angle. The current invention has a trimmer **1** which has a Trimmer Safety Guard **10**, an Auto Deflector **15**, an extender **20**, an adjustable angle bar **40** to control the angle of the trim string holder **35**, trim string **30**, a drive system which in the preferred embodiment is a pulley system attached to the trimmer belt guide pulley **70**, a support and a support hinge **80** connection to the lawn mower **100**.

[0063] The lawn mower trimmer **1** can be built into an existing lawn mower **100** or be part of a kit to attached to an existing lawn mower **100**.

[0064] FIG. 1 shows the frame of the trimmer attachment **1** being connected to the lawn mower **100**. This connection can be permanent or temporary. The trimmer **1** is connected to the lawn mower **100** through a trimmer bar **61** that is attached to the mower deck with a support hinge **80**. The trimmer bar **61** extends straight out from the lawn mower **100** in the preferred embodiment. At the end of trimmer bar **61** is a Trimmer Safety Guard **10** which covers the trimming head with its components to protect the users. At the front of the trimmer safety guard **10** is an Auto Deflector **15**. The Auto Deflector **15** is angled away from the trimmer **1** and the lawn mower **100** so that if the trimmer **1** hits an obstacle the trimmer head is moved away from the obstacle at an angle. The trimmer **1** has a return spring **130** that uses tension to hold the trimmer bar **61** in place with a downward pressure downward making sure that trimmer bar **61** is held in place.

[0065] FIG. 1 also shows the Extender **20** extending down from the trimmer head. The angle bar **40** attaches to the extender **20** by the angle adjuster **45**. The angle bar **40** allows the user to change the angle of the trim sting holder **35** holding the trim string **30** to change the angle of the trim.

[0066] FIG. 1 also shows a view of part of the driver system **50** having a driver belt **90**.

[0067] FIG. 2 shows under the trimmer safety guard **10**. The trimmer cross guard support **60** connects to the sides of the trimmer safety guard **10** as well to a cross bracket **160**. The extender **20** is connected to and extends out from the cross bracket **160**. FIG. 2 also shows the trimmer belt guide pulley **70** which is part of the pulley system **50** and is turned by the driver belt **90**.

[0068] FIG. 3 displays another bottom view of under the trimmer guard **10** with a view of the angle bar **40** being connect to the extender **20** by angle adjuster **45**. FIG. 3 shows a cross bracket **160** being connected to the trimmer safety guard **10**.

[0069] FIG. 4 shows the support and its hinged connection of the trimmer **1** to the lawn mower **100** with the trimmer **1** in an up-storage position with the trimmer bar **61** connected to one or more of upper trimmer support brackets **62** and lower which connects to trimmer support brackets **67**. This connection has bracket height adjusters **66** that consist of a screw and a slot allowing the user to adjust the height of the trimmer bar **61** and therefore the height of trim sting holder **35** holding the trim string **30** allowing the user to control the height of the trim. The lower trimmer support brackets **67** are connected to the mower deck with a support hinge **80** which is connect to the lawn mower, normally to the deck. In FIG. 4, the return spring **130** is extended. FIG. 4 shows the belt guide **95** which encircles the driver belt **90** to make sure that it is held in place. It can be made from metal or similar material like hard plastic or plastic band. The brackets and bars are made from a sturdy material such as metal.

[0070] Like FIG. 4, FIG. 5 shows the trimmer **1** in the non-use position where the belt with the lawn mower pulley system **110**.

[0071] FIG. 6 shows extender rod **20** connected to the angle bar **40** by angle adjuster **45** where the angle adjuster is a nut and bolt system which fits into an open angled area in the angle bar **40** where it is loosened to adjust and tighten to lock the extender rod **20** into place. In the preferred embodiment the angle bar **40** top is connected to the cross bracket **160**.

[0072] The extender rod **20** is a hollow tube made of a flexible strong material. The trim string **30** runs through the extender rod **20** to the trim string holder **35**.

[0073] FIG. 7 is a view of the trimmer **1** from the rear in the position for usage while FIG. 8 shows a front view. FIG. 8 shows the trim strip holder **35** at the end of the Extender **20**. The strip holder **35** holds one or more lines of trim string **30**. When the extender **20** turns it turns the trim string holder **35** which spins the trim string **30**. The turning trim string **30** it trims the grass or weeds that needed to be trimmed. The trim string **30** extends perpendicular from the extender **20**.

[0074] FIG. 9 shows a top view of the trimmer **1** attached to the lawn mower **100**. The belt adjusters **65** allow the adjustment of the trimmer bar **61** back and forth from the lawn mower **100** allowing the user to control the tension or to remove the driver belt **90**. The belt adjusters in the preferred embodiment consist of a nut and bolt and slot system where the nut is tighten to lock the length in place and loosen to adjust it or to remove the driver belt **90**.

[0075] FIG. 10 shows the lawn mower's pulley driving system. The trimmer driver pulley **70** is attached to the lawn mower pulley so that when the lawn mower pulley **120** turns driven by the lawn mower drive belt **115** it will turn the trimmer driver pulley **75**. A trimmer belt guide pulley **77** is attached to the lawn mower **100** to make sure that the driver belt **90** stays on the trimmer driver pulley **75**.

[0076] FIG. 11 shows the support and the pulley driving system from a side view. It shows where the driver belt **90** loops around trimmer driver pulley **75** and runs to the trimmer belt guide pulley **70**.

[0077] FIG. 12 shows a side view of the brackets attaching the trimmer **1** to the lawn mower **100**. In the preferred embodiment a support hinge bolt **81** secures the lower trimmer support brackets **67** to the mower deck with a support hinge **80**.

[0078] FIG. 13 a close-up view of the extender rod **20** connected to the angle bar **40** by angle adjuster **45** where the angle adjuster is a nut and bolt system which fits into an open angled area in the angle bar **40** where it is loosened to adjust and tighten to lock the extender rod **20** into place. The Extender nut **25** holds the extender rod **20** on to the cross bracket **160**.

[0079] FIG. 14 shows a close up view the attachment of the pulley system to the lawn mower pulley system.

[0080] FIG. 15 shows the components of the pulley system, showing an expanded view of the trimmer belt guide pulley **70** which is a circular pulley with the Drive Shaft bolt **210**, the drive shaft coupler **55** and the drive shaft washer **56**. The trimmer belt guide pulley **70** has the drive shaft coupler **55** on the inside of the trimmer belt guide pulley **70** and the drive shaft washer **56** is with the drive shaft bolt **210** turned into the drive shaft coupler **55**.

[0081] The cutting assembly consists of an upper driveshaft bolt (**210**) that screws into the drive shaft bar (**61**), inserts into the trimmer belt guide pulley (**70**) and into the proprietary drive shaft coupler (**55**). Driven by friction of the driver belt **90**, the belt guide pulley (**70**) turns the drive shaft coupler (**55**) that holds the trimmer cable (**88**) inside the extender (**20**).

[0082] In the preferred embodiment, the drive shaft coupler (**55**) is made with a threaded outside so that two hex nuts can hold the coupler assembly to the trimmer cross-guard support (**60**) and the belt guide pulley (**70**) at the same time.

[0083] Inside the drive shaft coupler (**55**) is solid metallic-filled in most of the way with a square opening so that a cable with a square end can fit snugly.

[0084] At the top of the drive shaft coupler (**55**) is enough hollowed-out space to let the upper drive shaft bolt (**210**) slip into and allow for movement.

[0085] The Extender (**20**) and the cable (**88**) are flexible to allow an angle bar (**40**) to achieve various angles to the trimming for angle areas and to cut down on multiple trimming times around

objects.

[0086] FIG. **16** shows the guard on side of the lawn mower deck which protects the deck if case objects are hit while trimming.

[0087] FIG. **17** shows a crosscut view of the extender **30** which shows that the extender **30** is a hollow tube which the trimmer cable **88** runs through to the trim string holder **35**.

[0088] The various features associated with the examples described herein and shown in the accompanying drawings can be implemented in different examples and implementations without departing from the scope of the present disclosure. Therefore, although certain specific constructions and arrangements have been described and shown in the accompanying drawings, such embodiments are merely illustrative and not restrictive of the scope of the disclosure, since various other additions and modifications to, and deletions from, the described embodiments will be apparent to one of ordinary skill in the art.

## Claims

1. A Riding Lawn Mower Lawn Trimmer comprising: a trimmer bar with a Trimmer Safety Guard, an extender that extends out from the trimmer bar with an adjustable angle bar that controls the angle of a trim string holder, trim string, where the trimmer bar is attached to a support and a support hinge that is connected to the lawn mower and having a drive system.
2. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: where the drive system is a pully system.
3. The Riding Lawn Mower Lawn Trimmer according to claim 2 further comprising: where the drive system has a driver belt attached to a lawn mower pully that turns a lawn mower drive belt turning a trimmer driver pully which turns a trimmer cable turning trimmer cable turning the trim string holder.
4. The Riding Lawn Mower Lawn Trimmer according to claim 3 further comprising: having a trimmer belt guide pully attached to the lawn mower securing the driver belt to a trimmer driver pully.
5. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: having the extender hollow with a trimmer cable within the hollow which is attached to the trim string holder.
6. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: having a trimmer cross guard support the connects to the sides of the trimmer safety guard.
7. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: having a cross bracket attached to the trimmer bar.
8. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: having the trimmer bar connected to a plurality of upper trimmer support brackets which connects to a plurality of trimmer support brackets.
9. The Riding Lawn Mower Lawn Trimmer according to claim 8 further comprising: having bracket height adjusters.
10. The Riding Lawn Mower Lawn Trimmer according to claim 9 further comprising: having the bracket height adjusters consist of a screw and a slot allowing the user to adjust the height of the trimmer bar **61** and therefore the height of trim sting holder **35** holding the trim string **30** allowing the user to control the height of the trim.
11. The Riding Lawn Mower Lawn Trimmer according to claim 8 further comprising: where the lower trimmer support brackets are connected to the mower by the support hinge.
12. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: where the support hinge connects a deck of the lawn mower.
13. The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising: where the angle adjuster is a nut and bolt system which fits into an open angled area in the angle bar.
14. The Riding Lawn Mower Lawn Trimmer according to claim 7 further comprising: where the

angle bar has a top that is connected to the cross bracket.

**15.** The Riding Lawn Mower Lawn Trimmer according to claim 4 further comprising; having a cutting assembly with an upper driveshaft bolt that screws into a drive shaft bar that inserts into the trimmer belt guide pulley and into a drive shaft coupler.

**16.** The Riding Lawn Mower Lawn Trimmer according to claim 15 further comprising; the belt guide pulley turns the drive shaft coupler that holds the trimmer cable inside the extender.

**17.** The Riding Lawn Mower Lawn Trimmer according to claim 1 further comprising; where the angle adjuster is a nut and bolt system which fits into an open angled area in the angle bar.

**18.** A Riding Lawn Mower Lawn Trimmer comprising: a trimmer bar with a Trimmer Safety Guard, an extender that extends out from the trimmer bar with an adjustable angle bar that controls the angle of a trim string holder, trim string, where the trimmer bar is attached to a support and a support hinge that is connected to the lawn mower and having a drive system where the drive system has a driver belt attached to a lawn mower pulley that turns a lawn mower drive belt turning a trimmer driver pulley which turns a trimmer cable turning trimmer cable turning the trim string holder and having the extender hollow with a trimmer cable within the hollow which is attached to the trim string holder.

**19.** The Riding Lawn Mower Lawn Trimmer according to claim 18 further comprising; having a cutting assembly with an upper driveshaft bolt that screws into a drive shaft bar that inserts into the trimmer belt guide pulley and into a drive shaft coupler.

**20.** The Riding Lawn Mower Lawn Trimmer according to claim 18 further comprising; being a kit.

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