

- [54] **ADJUSTABLE HANDLE FOR LAWNMOWERS**
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- [58] Field of Search.16/111 A; 280/47.37 R; 287/14; 306/16, 18; 292/263

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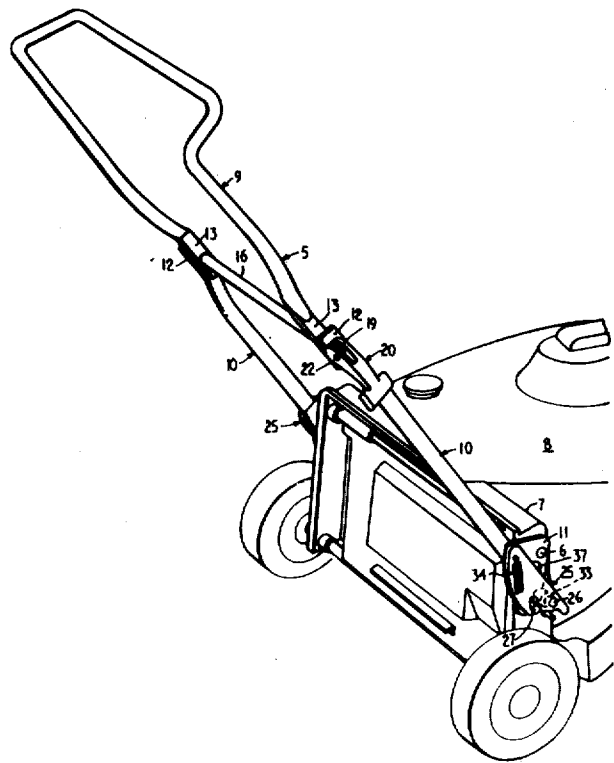
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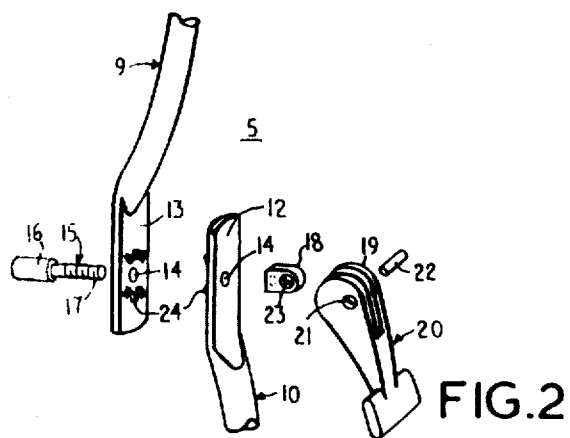
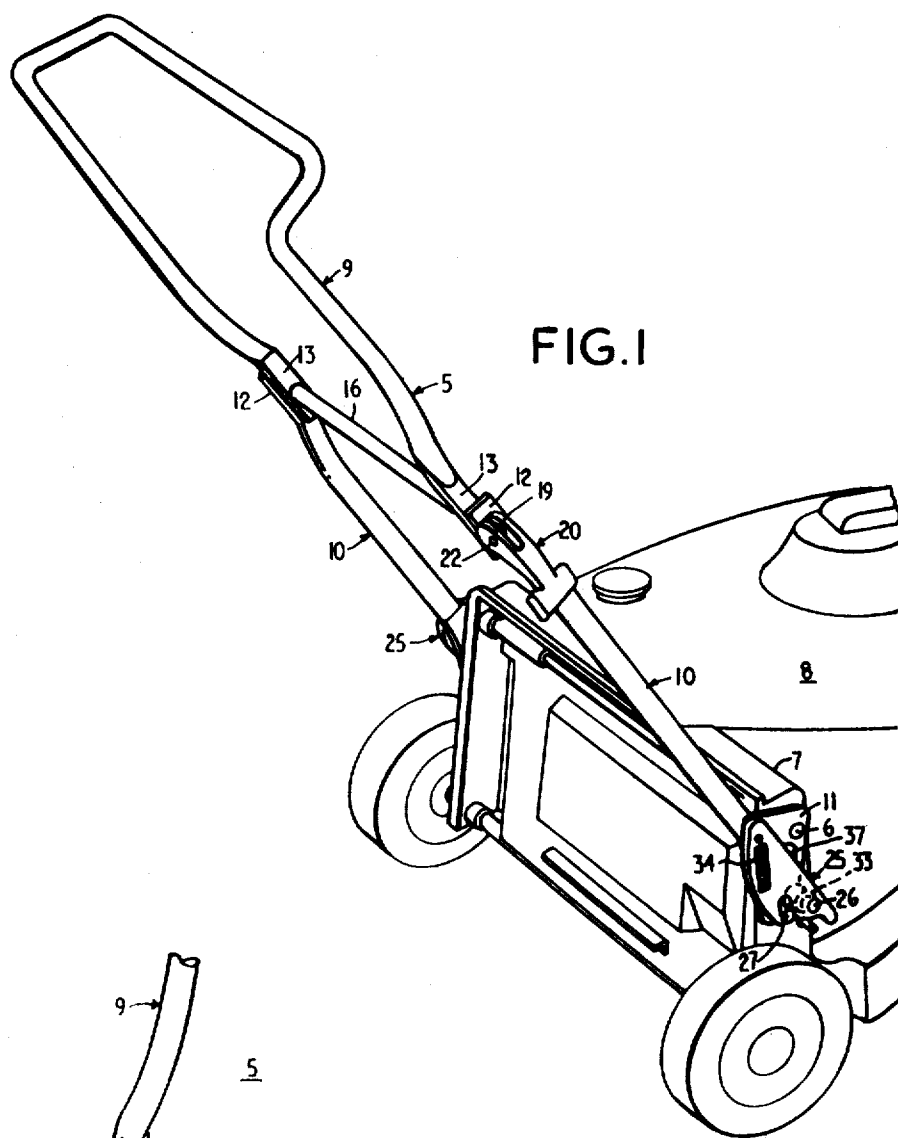
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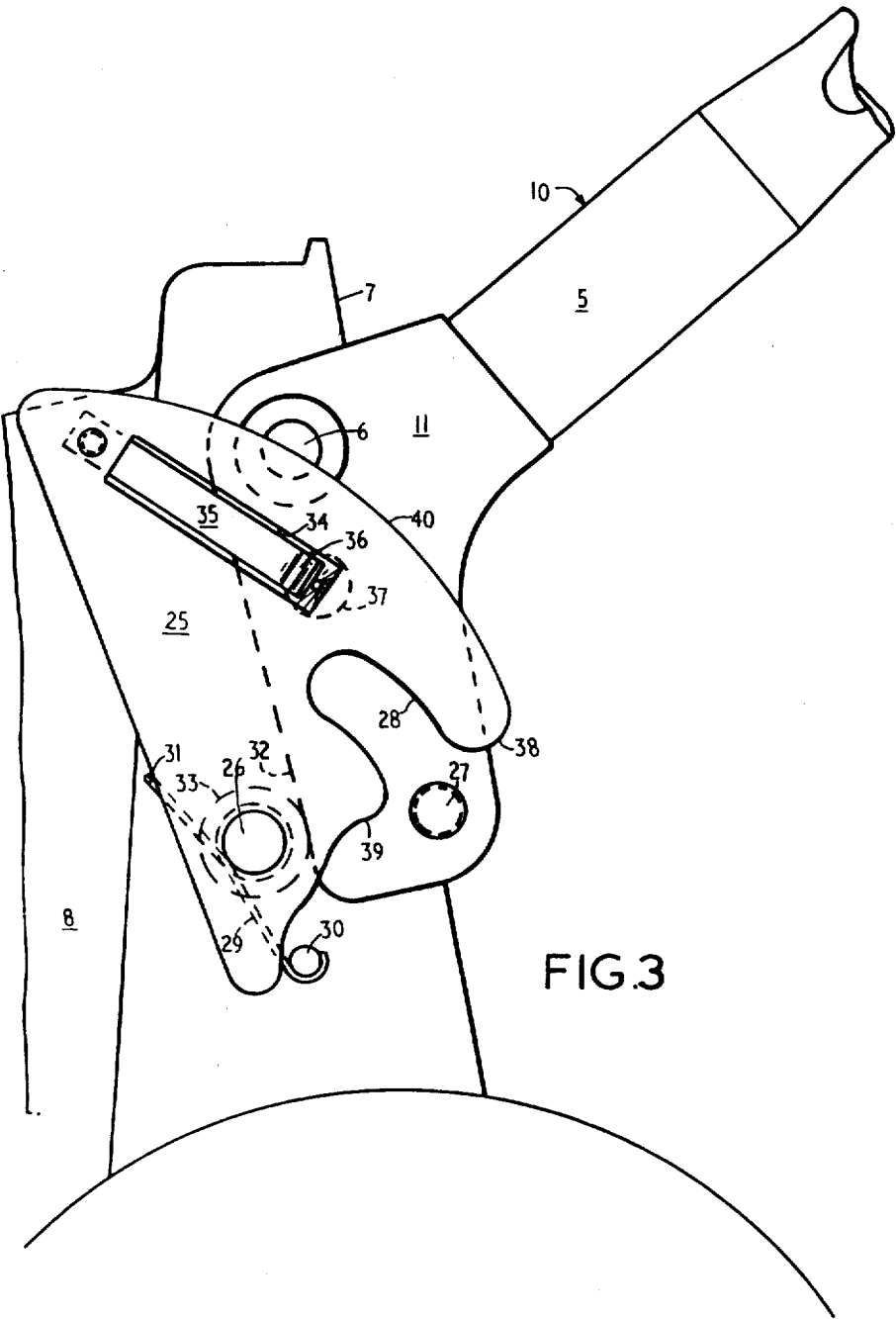
[57] **ABSTRACT**

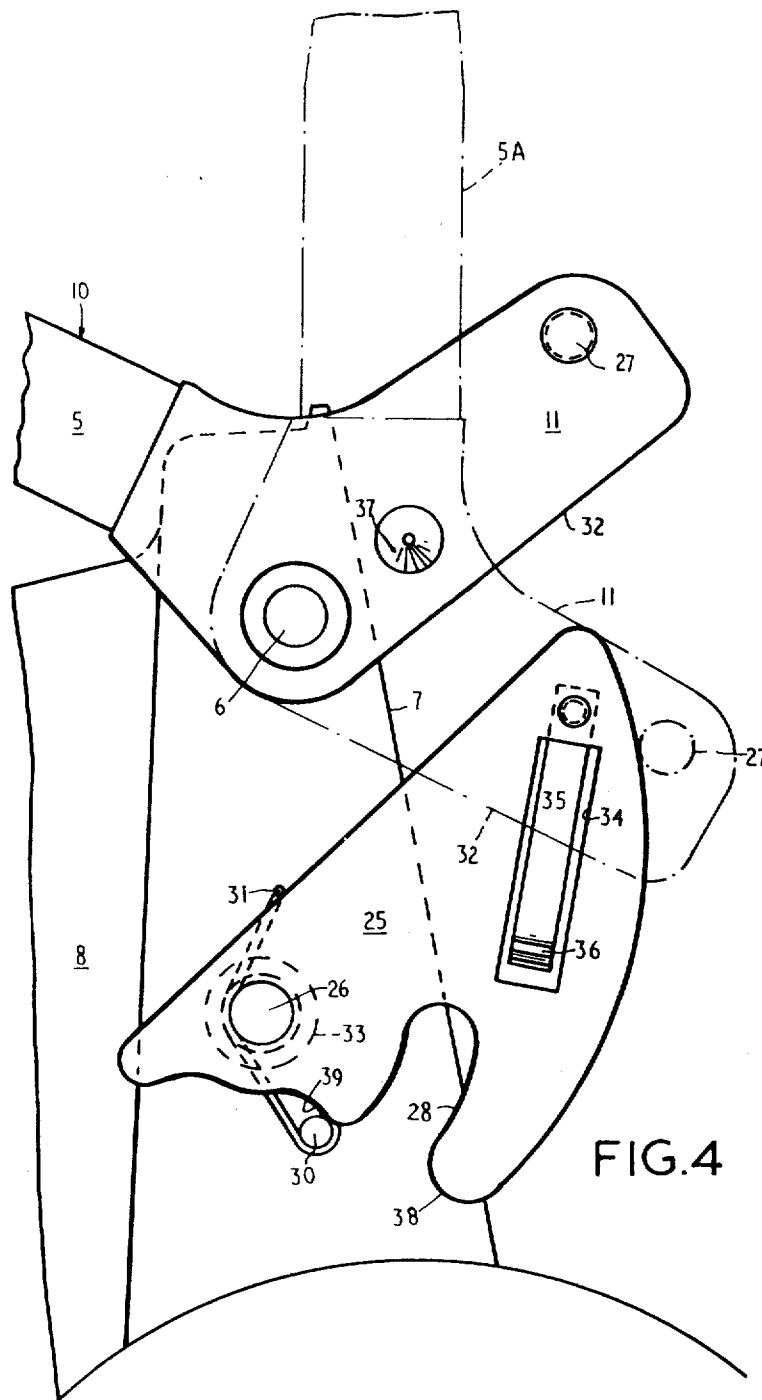
For a lawnmower a controlling handle articulated for collapsing over the mower, and in which its bottom end is detachably locked to the mower by a pivoted latch plate spring biased to its latching position, a bush over the latch plate pivot pin providing a stop for rotation of the handle in its erected condition, and a spring catch operative between the latch plate and the handle for holding the latch plate open until the handle is at least partly collapsed.

6 Claims, 4 Drawing Figures









ADJUSTABLE HANDLE FOR LAWNMOWERS

This invention concerns adjustable handles for the mobile chassis of lawnmowers.

It is the object of the invention to provide an adjustable controlling handle for a lawnmower which is sturdy in construction and simple and convenient in operation.

The invention in a general form provides a controlling handle for the frame of a lawnmower or other carriage which is movable between a locked erected condition and a collapsed condition, said handle comprising means for pivoting an end portion on the frame to provide for movement of the handle between said conditions, a locking member on the frame pivoted for movement between locking and unlocking positions, an abutment carried on the handle end portion and a capturing element therefor carried by the locking member, stop means on the frame for arresting rotation of the handle about its pivoting means beyond its erected condition, and means for biasing the locking member towards its locking position whereby in the erected condition of the handle the capturing element locks with the abutment to maintain the handle erected until the locking member is pivoted towards its unlocking position.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view of a typical lawnmower showing the handle in the erected and locked position;

FIG. 2 is a fragmentary perspective view of the articulated locking joint between the two handle components;

FIG. 3 is an enlarged elevation of the handle pivot showing the locking latch plates moved to the inoperative position prior to folding the handle; and,

FIG. 4 is a similar view to FIG. 3 showing the handle swung towards the folded position on top of the mower.

The lawnmower handle 5 is adapted to be pivotally secured at 6 to a rear mounting plate 7 of a typical lawnmower 8. The handle 5 comprises two articulated components 9 and 10. The lower component 10 consists of two tubular members secured to lock plates 11 at their lower ends. The upper free ends 12 of component 10 are flattened and set inwardly.

The upper handle component 9 comprises an inverted U-shaped tubular member, the free ends 13 of which are flattened and set inwardly to mate with the corresponding ends 12 of component 10. The flattened ends 12 and 13 are medially bored as at 14 and an elongated tie rod 15 (see FIG. 2) passes through said holes 14 in both handle components 9 and 10. A tubular spacer 16 is mounted on the tie rod 15 between the free ends of the handle components. The remote end of the tie rod which is not visible in FIGS. 1 and 2 is provided with a head of enlarged diameter. The other end 17 of the rod 15 is threaded so that it may be screwed into a flat tongue 18 which is adapted to engage the forked end 19 of a locking cam 20. The said forked end 19 is radiused about the two peripheral end surfaces and a hole 21 is provided, which is offset with respect to said radiused ends of the forked lever.

A pin 22 passes through the hole 21 in the lever 20 and also through a hole 23 in the tongue 18. If the lever 20 is rotated about the pin 22 so that the radiused end of said lever moves away from the adjacent flattened

end 12 of the component 10. The said flattened ends 12 and 13 will move apart due to the pre-arranged spring in upper component 9 and said component 9 can be swung down about the tie rod 15 so that the handle 5 is in a folded condition.

Upstanding rack teeth 24, are formed in the opposed faces of each pair of flattened ends 12 and 13. When the handle component 9 is swung back up into line with the lower component 10 and the locking handle 20 is rotated so that its radiused end 19 forces the flattened handle ends 12 and 13 into contact again, the rack teeth 24 will engage to lock the handle securely in an extended condition. Provision is also made for folding the handle 5 about its pivots 6, to a folded condition above the mower 8. Locking means for each pivot 6 are also provided and function as follows.

Flat latch plates 25 are provided at each side of the mower back plate 7. Each latch plate 25 is independently and rotatably secured to a pivot 26 on the respective back plate, a short distance below the respective pivot 6. The latch plates 25 overlie the lock plates 11 at the root ends of the handle component 10.

An outwardly extending pin 27 is secured to the outer end of each lock plate 11 and a groove 28, arcuately curved about the pivot 26, is formed in each latch plate 25 so that it engages the pin 27 when the plates 25 are swung over to a locked condition as shown in FIG. 1. A torsion spring 29, mounted on the pivot 26, is anchored to a pin 30 on the mower back plate 7 and engages the latch plate 25 at 31 so that said plate 25 is biased to the locked condition.

In the locked condition of the handle 5, shown in FIG. 3, the back edge 32 of the plate 11 engages a bush 33 on the pivot 26 to prevent movement of the handle 5 in one angular direction. The engagement of the groove 28 with the pin 27 prevents angular handle movement in the other direction.

When the handle 5 is to be folded about its pivots 6, the latch plates 25 are both swung over by the operator to the position shown in FIG. 3. The following means are provided to hold the plates 25 in this unlocked position.

A slot 34 is provided in each latch plate 25 in which a leaf spring 35 is mounted. The end 36 of the spring 35 is bent inwardly to engage a conically headed pin 37 mounted in the plate 11. As the plate 25 is swung to the unlocked position, as in FIG. 3, the end 36 of the spring 35 rides over the pin 37 which then prevents the spring 29 from moving the plate 25 to the locked position.

The handle 5 can now be swung about the pivot 6 towards a folded position above the mower 8. The pin 27 will pass the adjacent end 38 of the latch plate 25 and, as soon as it is clear continued movement of the handle 5 will withdraw the conical pin 37 from the spring 35, allowing the plate 25 to be swung to the locked position by the spring 29 as shown in FIG. 4. This movement is limited by the abutment 39, on said plate 25, striking the pin 30 as can be seen in FIG. 4.

When the handle 5 is to be re-erected, it is swung back to a position shown in dotted outline at 5A in FIG. 4. In this position the pin 27 engages the outer radiused edge 40 of the plate 25. Because the pin 27 is well above the pivot point 26 of the plate 25, said plate will be swung back towards the unlocked position against spring 29 as the pin 27 rides over the radiused edge 40.

When the pin 27 rides around the end 38 of said plate 25 it will drop back so that the groove 28 engages the pin 27 and locks the handle in the position shown in FIG. 1.

Besides the above-described features which facilitate ease of locking and unlocking the handle in and from an erected condition, it will be seen that by suitable curvature of the slot 28 a jamming effect between the pin 27 and one side of the slot 28 can be obtained during abutment of back edge 32 of plate 11 against the bush 33. Wear in these components as well as in the pivots 6 and 26 will be compensated by deeper penetration of the pin 27 into the slot 28, thereby ensuring at all times a rigid connection of the handle to the lawnmower. The relative positions of the pin 27 on lock plate 11 and slot 28 on latch plate 25 in the erected condition of the handle are determined by the stop bush 33. Thus its internal bore providing a socket for the latch plate pivot 26 and its external diameter providing a stop for lock plate 11 require accurate machining. This bush is in practice an auto-turned component whether or not it is integrally formed with the baseplate.

What we claim is:

1. A controlling handle for the frame of a lawnmower or other carriage which is movable between a locked erected condition and a collapsed condition, said handle comprising means for pivoting an end portion on the frame to provide for movement of the handle between said conditions, a locking member on the frame pivoted for movement between locking and unlocking positions, an abutment carried on the handle end portion and a capturing element therefor carried by the locking member and having a ramp surface for engagement with said abutment, annular stop means surrounding the locking member pivot for arresting rotation of the handle about its pivoting means beyond its erected condition, and means for biasing the locking member towards its locking position whereby in the erected condition of the handle the ramp surface of the capturing element applies a force to the abutment tending to draw the handle onto the annular stop means to maintain the handle erected until the locking member is pivoted towards its unlocking position.

2. A controlling handle according to claim 1, wherein the stop means is a metal bush providing a

socket for the locking member pivot.

3. A controlling handle according to claim 1 wherein the handle has two articulated sections retainable in selected relative angular positions, the handle sections at their corresponding adjacent ends having flattened portions pivoted on a tie rod extending transversely across the handle, and a cam-type pivoted clamp on an end of the tie rod and rotatable for clamping the flattened portions together.

4. A controlling handle according to claim 1, wherein the abutment is a pin, the locking member is a plate, said capturing element is a groove to accept the pin, and the biasing means is a spring urging the plate towards the pin when the handle is engaged with the stop means in its erected condition, said groove having an inclined wall which by contact with the pin jams the end portion of the handle against said stop means to provide rigidity of erection and compensation for wear.

5. A controlling handle for a rotary lawnmower baseplate articulated for folding from an erected condition to a collapsed condition overlying the baseplate, said handle comprising an intermediate elbow joint for folding of an upper part of the handle about a lower part, means for locking said two parts in an erected condition, lower end portions on said lower part having locking projections and being pivoted at opposite sides of the baseplate, for movement between said erected and collapsed conditions of the handle and at each of said sides a latching plate on a pivot supported by the baseplate, spring means urging the latching plate to a latching position, a slot in the latching plate to capture for latching in the erected condition of the handle the locking projection on the respective handle end portion, an annular stop element surrounding the latching plate pivot and arresting rotation of the handle lower end portion beyond said erected condition of the handle, and catch means operative between the latching plate and said lower end portion to hold the latching plate in a displaced condition off its latching position until the handle is partly collapsed.

6. A controlling handle according to claim 5, wherein the catch means is a post on the handle lower end portion having at least one tapering wall, and a spring catch on the latching plate to flex in passing over the tapering wall and then to lock behind the post in the handle's erected condition.

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