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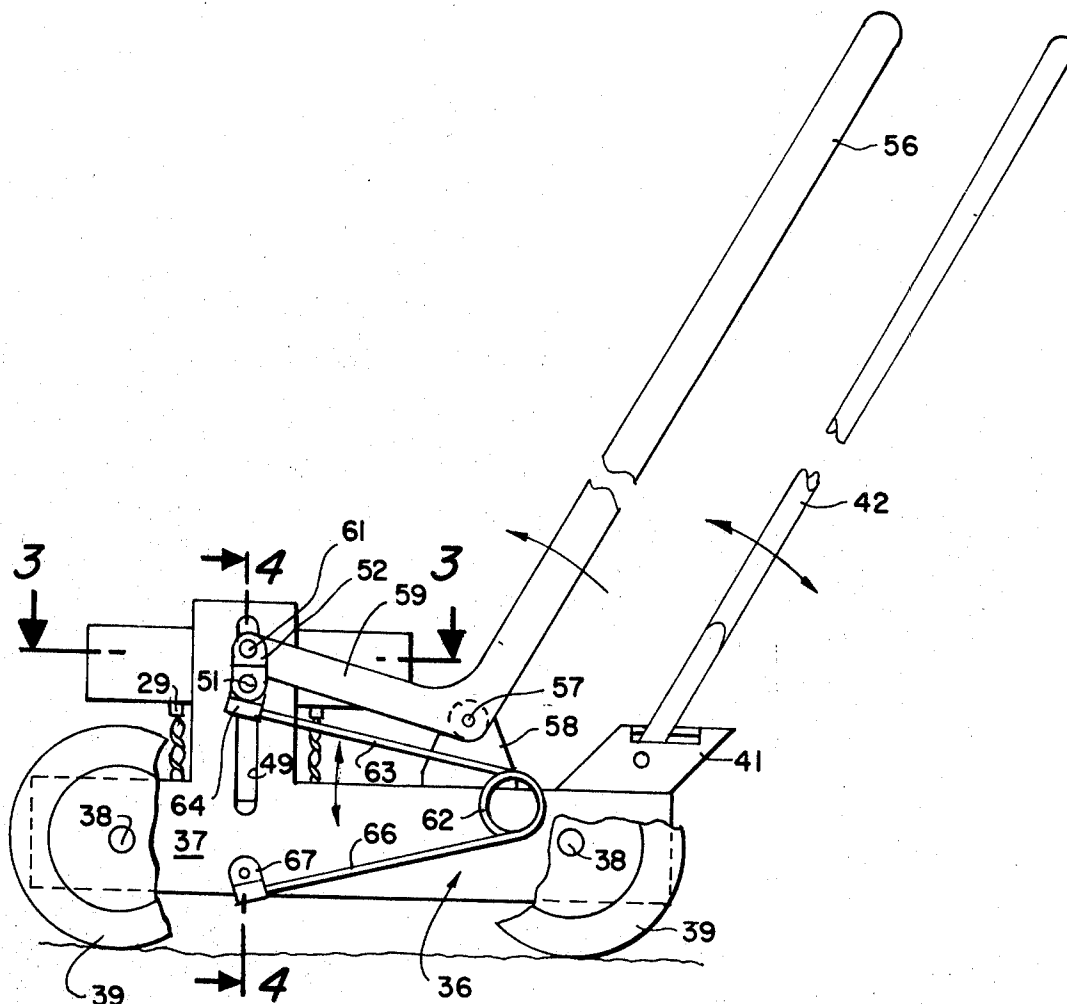
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[54] LAWN-AERATING MACHINE
2 Claims, 5 Drawing Figs.

[52] U.S. Cl. 172/21,
111/92
[51] Int. Cl. A01b 45/02
[50] Field of Search 172/21;
56/226, 249; 111/89.92

ABSTRACT: A lawn-aerating machine has a chassis which may be moved about the lawn on wheels. A transmission case moves vertically relative to the chassis and from the case depend drills shaped to dig holes in the lawn. A prime mover drives each of the drills. Means is provided to lower the drills relative to the chassis under control of the operator.



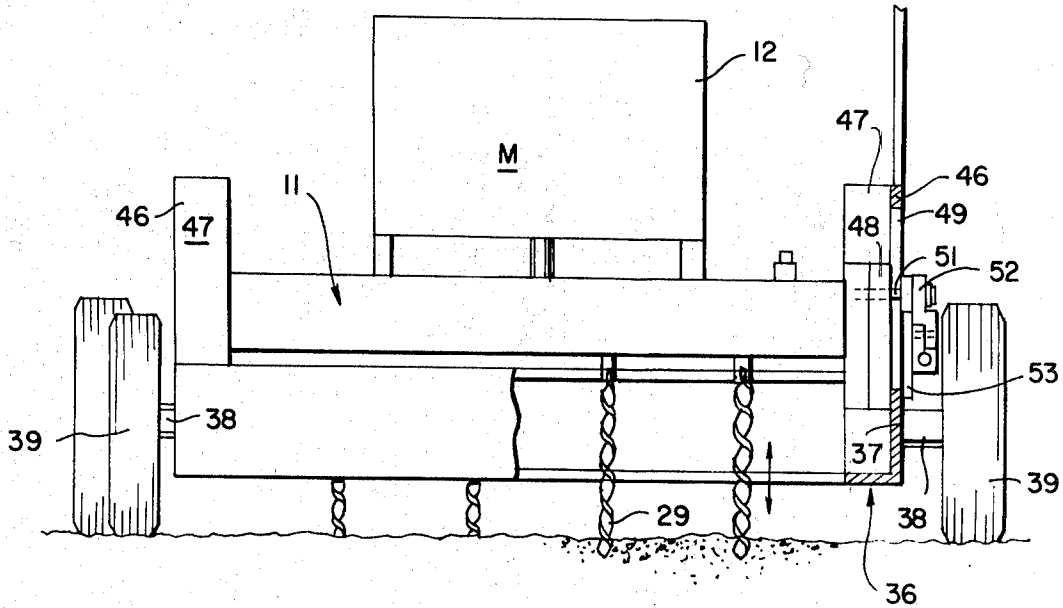


FIG. 1.

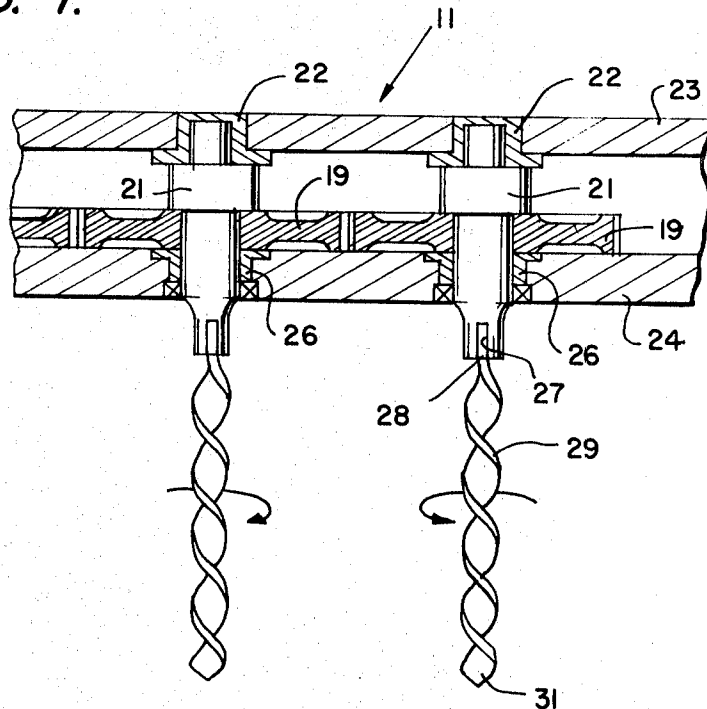


FIG. 5.

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FIG. 3.

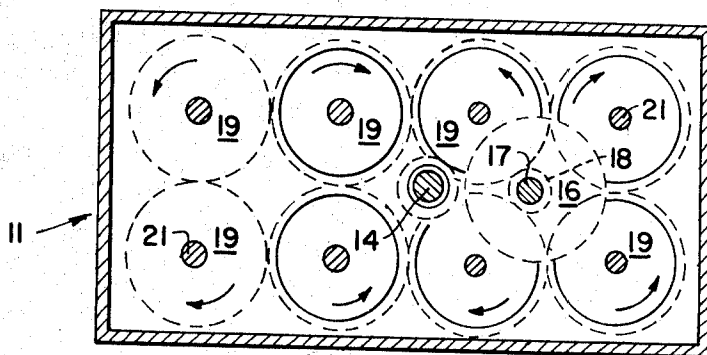


FIG. 4.

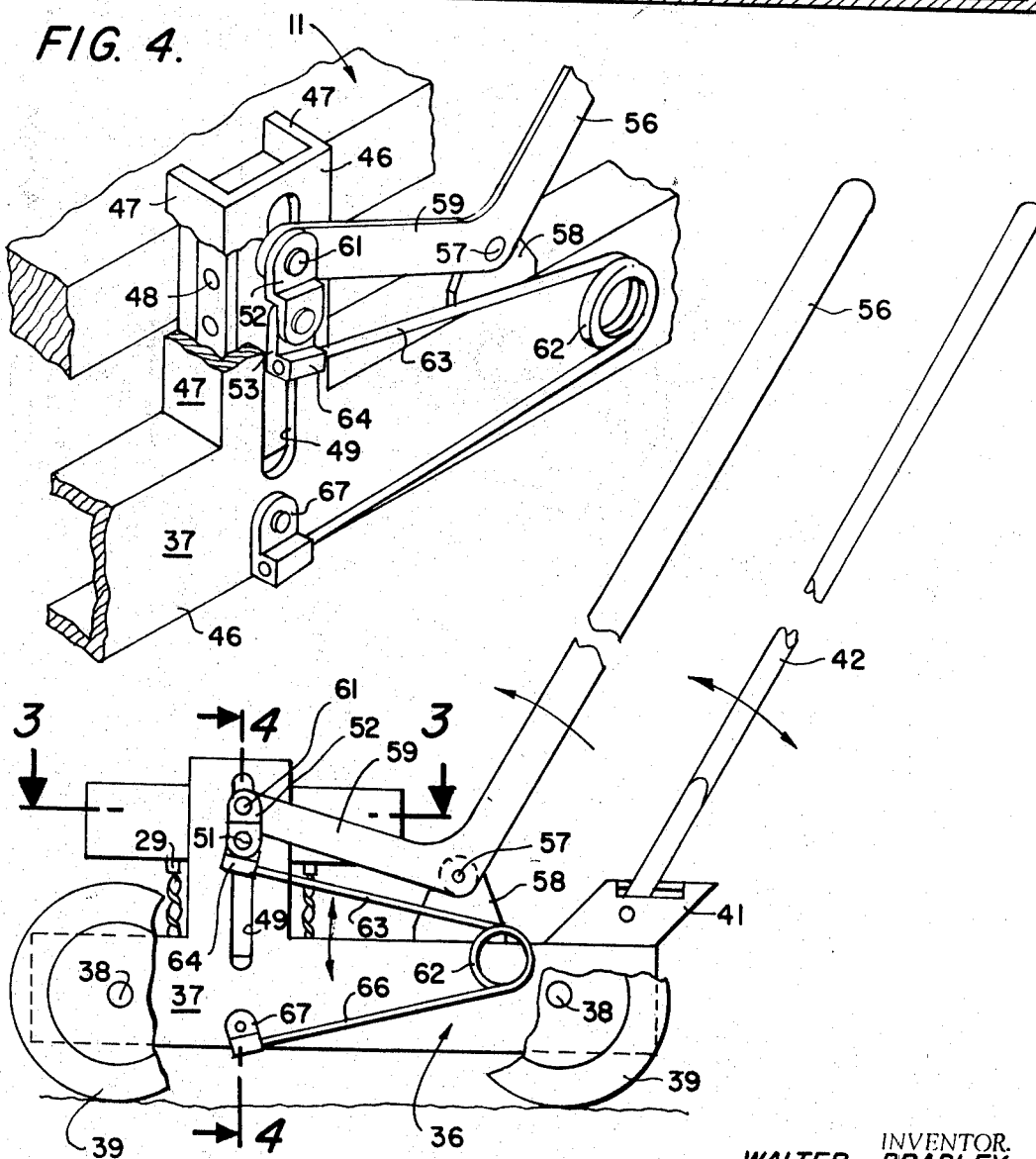


FIG. 2.

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LAWN-AERATING MACHINE

This invention relates to a new and improved lawn-aerating machine.

A principal feature of the present invention is the fact that there is provided a machine which is readily maneuverable about the lawn and easily operated with a minimum of skill required.

A principal object of the present invention is to drill a plurality of holes in a lawn rapidly and simultaneously at regularly spaced intervals and then to retract the drills automatically.

A feature of the invention is the rugged construction of the device which insures a long life with little maintenance required.

A further feature of the invention is the ease with which the drills may be replaced when broken or for sharpening.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

FIG. 1 is a front elevational view of the machine partly broken away in section.

FIG. 2 is a side elevation thereof.

FIG. 3 is a horizontal sectional view taken substantially along the line 3-3 of FIG. 2.

FIG. 4 is a fragmentary sectional view taken substantially along the line 4-4 of FIG. 2.

FIG. 5 is an enlarged fragmentary sectional view through a portion of the transmission case.

The upper portion of the machine comprises a transmission case 11 which is rectangular in plan and is sealed so that oil may be maintained therein to reduce friction of the mating parts. Supported above transmission case 11 is a prime mover 12 which is preferably a gasoline engine. The prime mover 12 has a depending shaft which extends inside the case 11 and carries internally thereof a pinion 14 meshing with gear 16 on jack shaft 17 journaled in the casing 11. Shaft 17 also carries a pinion 18 which meshes with one of a plurality of driven gears 19 which are contained within casing 11 and mesh with adjacent gears so that all of the gears 19 are driven simultaneously and alternate gears are driven in opposite directions. As is shown in the accompanying drawing, there are eight gears 19, but this number is subject to variation. Each gear 19 is supported on a vertical shaft 21. The upper end of each shaft 21 is received in a bushing 22 in the upper casing plate 23. Shaft 21 projects through the bottom casing plate 24, there being a bushing and oil seal 26 surrounding the shaft. The lower end of each shaft 21 is split as indicated by reference numeral 27 and receives the flat upper end 28 of drill 29. In a preferred form of the invention, the drill 29 is formed of a flat piece of stock twisted in the shape as shown in FIG. 5 and formed with the point 31 at its lower end. A feature of the invention is the fact that the point 31 penetrates the soil when the casing 11 is lowered and the twisted shape of the drill 29 assists in digging the drill into the ground.

Below casing 11 is a chassis 36 which is rectangular in plan and of generally the same shape as casing 11 but slightly

larger. The sides 37 of chassis 36 are bent upwardly and receive horizontal transverse axles 38 carrying wheels 39 at their outer end. At the rear of each side 37 is an extension 41 which receives a handle 42 preferably quickly detachable as is well understood in the power lawn mower art and which is used to steer and advance the machine. On each side of the machine is an upward extending guide block 46 having inward extending edges 47 between which slide a guide block 48 fixed to transmission case 11. A vertical slot 49 is formed in guide block 46 and a stub shaft 51 projects through a slot 49 to the outside of guide 46 and receives a fitting 52 on its opposite end. A slide 53 is interposed between guide 46 and fitting 52 and bridges the slot 49. Case-lifting handle 56 extends forward and generally parallel to steering handle 42. At its lower end handle 56 is pivoted by means of pivot pin 57 to an ear 58 extending up from side 37 of chassis 36. Forwardly of ear 58 is a lever 59 which is rigidly connected to handle 56 and the forward end of lever 59 is pivoted by means of pin 61 to fitting 52. A hairpin shaped spring 62 is provided on either side of chassis 36. One forward end 63 of spring 62 is connected to socket 64 on fitting 52. The other forward extending end 66 of spring 62 is connected by fitting 67 to side 37. The legs 63-66 of spring 62 tend to spring apart and thus to raise the transmission case 11 upward relative to chassis 36. However, when handle 56 is turned in a counterclockwise direction as viewed in FIG. 4, lever 59 is depressed causing the case 11 to move downwardly as guided by the slide 48 moving in guide 46. Downward movement of the transmission case 11 lowers the drill 29 into the soil. When the drills are fully depressed, handle 56 is released and the spring 62 restores the transmission case 11 to upward position. Thereupon, the operator moves the device by means of handle 42 to the next location and again depresses handle 56 to drill the next series of holes.

We claim:

1. An aerating machine comprising a chassis, wheels mounting said chassis for movement over the ground, a first handle for guiding said chassis, a transmission case, guide means for mounting said case for reciprocating substantially vertical movement relative to said chassis, a prime mover on said case, a plurality of drills depending from said case, drive means in said case connected to said prime mover to rotate each said drill, lowering means for lowering said case relative to said chassis, said drills entering the soil below said chassis as said case is lowered, and resilient means biasing said case upward relative to said chassis, said chassis having an upward extending guide formed with an elongated vertical slot and said chassis having a slide with a pin extending through said slot and which further comprises a second handle having a lever attached to said pin and means pivotally mounting said second handle on said chassis extending generally parallel to said first handle, a plurality of shafts rotatably mounted in said case, each driven by said drive means, and means for attaching one said drill to each said shaft, a gear on each said shaft, each said gear meshing with at least two adjacent gears and means for rotating one said shaft from said prime mover.

2. A machine according to claim 1 in which each said drill is formed of a flat piece of metal twisted into helical shape and pointed at its lower end.