

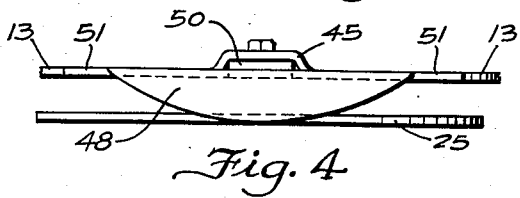
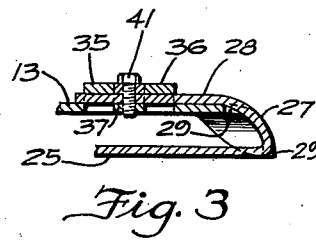
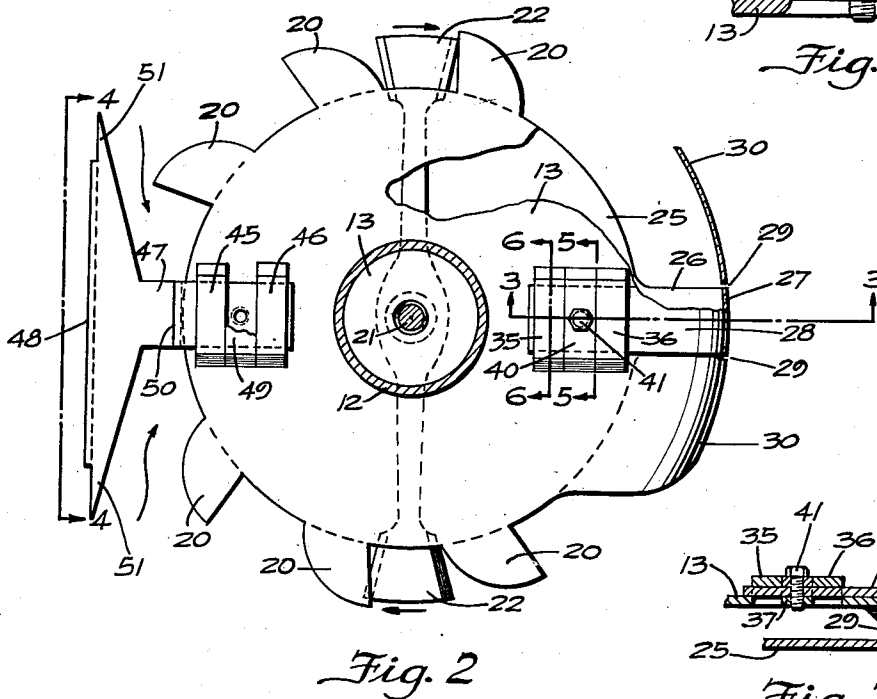
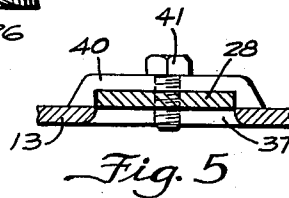
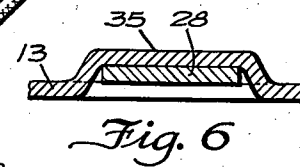
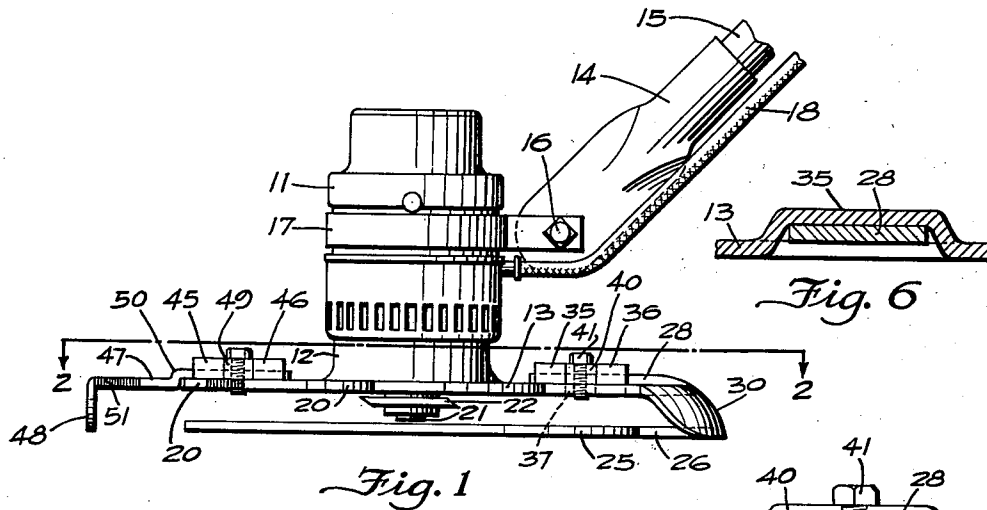
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H. C. DREISCHERF

2,487,224

CUTTER AND TRIMMER

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INVENTOR.
Henry C. Dreischerf
 BY
George A. Quier
 ATT'Y.

UNITED STATES PATENT OFFICE

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CUTTER AND TRIMMER

Henry C. Dreischerf, Chicago, Ill.

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2 Claims. (Cl. 56—25.4)

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This invention relates to grass cutters and hedge trimmers of the general class described in U. S. Patent No. 2,427,265, dated September 9, 1947.

Machines of this type are equipped with a motor-driven cutting blade which is rotatably disposed between a peripherally toothed top guard plate and a generally circular bottom guard or guide plate. The two plates are held together by means of radially aligned arms extending therefrom at one side thereof, and joined by a bolt. The bottom plate carries another radial extension projecting therefrom opposite the arm which is bolted to the corresponding arm of the top plate. On this latter extension of the bottom plate is mounted an upwardly projecting guard or guide element, usually referred to as finger guide, which is intended to guide the handling of the machine and to protect the cutting blade against damaging edgewise contact with stationary objects such as walls, posts, fences and the like. The bottom guide plate is indispensable in such structures and must be removed whenever it is desired to gain access to the cutting blade for removal thereof, for example, for the purpose of sharpening the cutting edges.

Such machines exhibit certain shortcomings. For example, the removal of the bottom guard plate is frequently rendered difficult because the bolt holding together the two radial extensions of the plates is usually jammed and requires application of more or less force, even the use of a bench vise to loosen it, thus delaying operation and calling for massive structures which are entirely out of proportion with the overall size of the machine. The radially extending relatively massive arms for mounting the plates constitute unsightly and, from the operational point of view, detrimental obstructions. They also increase the weight of the machine and therefore contribute to fatigue of the operator in handling it. There is no control over the path or course of the cut grass or shrubbery fragments. Such fragments are usually wet and are propelled outwardly and upwardly, which constitutes a nuisance and inconvenience to the operator, who must wear leggings or the like in order to have some protection against the cold and moist fragments deposited on his body. The finger guide referred to before is shaped in old structures in such a way as to require twisting of the machine for the purpose of proper trimming, e. g., alongside the straight edge of a pedestal, tombstone, and the like.

The invention eliminates these and other short-

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comings, by simplifying certain elements and by providing new guide and guard structures, resulting in improved handling and operation of the machine.

Among the specific objects of the invention are the following: (1) the provision of an apron or skirt which is integral with the top guard plate and depends therefrom, covering a peripheral sector which is in radial alignment with the handle, facing the operator, and guiding grass and shrubbery fragments downwardly to the ground, thus protecting the operator against contact with such fragments; (2) the provision of a bottom guard plate having a radially projecting arm for interlinking mounting coaction with a groove or slot in the apron depending from the top plate, thus holding the bottom plate against angular displacement relative to the top plate; (3) the provision of mounting means on the top plate for receiving the radial arm of the bottom plate, and a device for protecting and securing such mounting means against ingress of moisture and fragments which might cause or contribute toward binding and jamming thereof; (4) the provision of a finger guide acting as a blade guard and grass guide element secured to the top guard plate and projecting therefrom radially outwardly and downwardly, in edgewise positional relationship with the blade, thus avoiding obstruction of the cutting area radially of the bottom guard plate. This element is secured on the top guard plate by means which are similar to the means for mounting the mounting guard plate thereon, and is so constructed and arranged that grass is always guided into the path of the blade to eliminate twisting of the machine when trimming is desired along a straight path; and (5) the apron at one end of the machine and the finger guide at the other end thereof may be used in the manner of skids to keep the blade suspended at a proper height, thus permitting use of the machine without a bottom guard plate.

These and other objects and features will be described more in detail with reference to the accompanying sheet of drawings, wherein

Fig. 1 is an example of a grass cutter or hedge trimmer made in accordance with the invention; Fig. 2 is a top view, with some parts broken away, taken approximately along lines 2—2 in Fig. 1, looking in the direction of the arrows;

Fig. 3 is a sectional view of the attachment of the bottom guard or guide plate to the top guard plate taken approximately along lines 3—3 in Fig. 2;

Fig. 4 is an end view of the structure taken

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approximately along lines 4—4 in Fig. 2, looking in the direction of the arrows; and

Figs. 5 and 6 are sectional views, through parts disposed on top of the machine, taken approximately along lines 5—5 and 6—6 in Fig. 2, looking in the direction of the arrows.

Referring now to the drawings, numeral 11 indicates a suitable motor mounted on the tubular neck 12 projecting from the top guard or guide plate 13. Numeral 14 indicates a mounting for a handle 15. This mounting may be attached at 16 to a clamp shell 17. A cord 18 supplies current to the motor 11.

The top plate 13 is provided with peripheral teeth 20. The motor shaft 21 extends downwardly through the top plate 13, and attached to this shaft is a cutting blade 22. The peripheral teeth 20 on the top plate 13 may be made as described in the previously mentioned U. S. Patent No. 2,427,265. The structure of the cutting blade and its coaction with these peripheral teeth may likewise correspond to that described in the co-pending application.

The bottom guard or guide plate 25 is provided with a radially projecting extension 26 which is bent angularly upwardly and inwardly, as indicated in Figs. 2 and 3 at 27, terminating in the arm 28 which extends in a plane in parallel with the plane of the plate 25.

The peripherally toothed top plate 13 carries an extension forming an apron or skirt 30 which is integral with the top plate 13 and extends downwardly and outwardly, as shown in the drawings. This skirt or apron covers a peripheral sector of the top plate 13 which is in radial alignment with the handle 15 and thus faces the operator. Grass and shrubbery fragments cut by the blade 22 are propelled outwardly, and in this angular sector covered by the apron 30 they are forced in a path downwardly to the ground. This feature eliminates the shortcomings of previous structures of this type in which the shrubbery and grass fragments are propelled against and deposited on the body of the operator.

The skirt or apron 30 is provided with a slot or groove 29 for receiving the upwardly and inwardly curving portion of the arm 28 of the bottom plate 25. Mounting loops 35, 36 are punched or pressed out from the material of the top plate 13, leaving a central ridge 37. The arm 28 is pushed into the radially extending rectangular space formed by the loops 35 and 36. These loops constitute part of the mounting means for the arm 28 and therefore for the bottom plate 25. The space between the loops 35 and 36 is filled in by means of a special bridge piece 40, the form of which is particularly apparent from Fig. 5. The bridge piece is shaped exactly like the loops 35 and 36, and is provided with a hole for receiving the threaded bolt 41, which extends through the bridge piece 40 and through a hole in the arm 28 and is threaded into the intervening ridge 37, thus holding the arm 28 and therewith the bottom plate 25 firmly in place and against displacement radially of the top plate. The groove or slot 29 prevents angular displacement of the arm 28 and of the bottom plate 25 by holding the portion 27 of the arm 28 in an obvious manner.

The bridge piece 40, when put in place as described, prevents ingress of moisture, grass and shrubbery fragments and the like into the mounting and thus avoids jamming thereof. This feature facilitates removal of the bottom plate from the top plate, when such bottom plate is used, for the purpose of gaining access to the shaft 21, for

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example, for removing the blade 22 for sharpening of its cutting edges, or for other purposes.

Attention is directed to the fact that the edge of the apron or skirt 30 is rounded, as particularly shown in Figs. 1, 2 and 3, forming a skid-like structure which may be used in conjunction with the new finger guide for operating the machine without a bottom plate. This feature will be explained in detail later on.

The structure so far described does not require massive mounting arms and the overall weight of the machine is therefore kept at a minimum.

At the other side of the structure are provided loops 45 and 46 punched or pressed out from the material of the top plate 13 in exactly the same manner as described in connection with the loops 35, 36 for mounting the arm or extension 28 of the bottom plate. These loops form a mounting for the arm 47 of the new finger guide or guard element 48. A bridge piece 49 is provided in the intervening space between the loops 45 and 46. This bridge piece is formed exactly like the bridge piece 40 described in connection with the mounting of the bottom guard or guide plate. The finger guide 48 is straight, as shown in Figs. 1 and 2, having two extensions 51 and a curved bottom edge, which is particularly apparent from Figs. 1, 2 and 4.

The extensions 51 of the finger guide element 48 guide grass and shrubbery, incident to the operation of the machine, which involves moving the machine sideways over the area to be cut or trimmed, into the space between the guard teeth 20 in the direction of the arrows shown in Fig. 2.

The new finger guide presents two principal advantages, namely, first, it permits trimming along a straight path alongside an object such as a pedestal or a tombstone, thus eliminating angular twisting of the machine, and, second, the machine may be used without the bottom plate 25, the rounded edges of the finger guide and of the apron 30 acting in the manner of skids which keep the cutting blade suspended at a proper height.

The structure provides for the advantages previously mentioned, and for additional advantages, which include the following: the angularly confined skirt or apron protects the operator against contact with grass and shrubbery fragments; the mounting of the bottom guard or guide plate 25 is simplified, reducing the weight of the machine and improving its handling, and particularly the attachment and removal of the bottom guard plate; the mounting of the bottom guard plate is protected against ingress of grass, shrubbery and like fragments, and against ingress of moisture, preventing jamming thereof; displacement of the bottom guard plate radially is prevented by the positive attachment of the bridge piece 40 which is bolted to the ridge 37 of the top plate 13, holding the arm 28 in place; angular displacement of the bottom plate is avoided by disposing part of the arm 28 in the slot or groove 29 of the apron 30; the mounting for the finger guide element 48 corresponds to the mounting of the arm 28 of the bottom plate 25, with all the advantages resulting therefrom; the curved bottom edge of the guard 48 permits tilting of the structure, as on a swivel, facilitating the operation and handling of the machine; the cutting area underneath the top plate 13 is not obstructed by any member extending upwardly from the bottom plate, as in previous structures; there are no obstructions on top of the machine which would be detrimental either from the manufacturing, operation or ap-

pearance point of view; the structure of the finger guide eliminates angular twisting of the machine when trimming is desired along a straight path; and the machine may be used without the bottom guard plate by using the apron and the finger guide as skids in contact with the ground, all as described above in detail.

Changes may be made within the scope and spirit of the accompanying claims wherein I have defined what I believe to be new and desire to have protected by Letters Patent of the United States.

I claim:

1. A rotary grass cutter of the class described comprising a rotatable cutting blade, a relatively stationary generally circular platelike member disposed above said blade, said member carrying a motor for rotating said cutting blade and forming a top guard plate therefor, a relatively wide extension which is integral with said top guard plate projecting radially rearwardly and angularly downwardly therefrom to form a peripherally arcuate rearwardly disposed and downwardly directed apron for catching objects dislodged by said blade incident to the cutting operation thereof and deflecting such objects downwardly for deposit on the ground away from the operator, the downwardly depending portion of said apron being provided with a substantially centrally disposed slotlike cutout, a companion bottom guard plate disposed underneath said cutting blade, an arm which is integral with said bottom guard plate extending radially rearwardly therefrom and being bent upon itself angularly upwardly and radially inwardly, the angularly upwardly extending portion of said arm being disposed in said slotlike cutout in the apron of said top guard plate to hold said arm and therewith said bottom guard plate against angular displacement relative to said top guard plate, mounting means for securing the radially inwardly extending portion of said arm on said top guard plate comprising a pair of spaced looplike members projecting axially upwardly from said top guard plate for receiving the radially inwardly extending portion of said arm, a generally U-shaped clamping member disposed within the space between said looplike members to hold such portion of said arm in engagement with the top guard plate, and means for securing said clamping member to fasten said arm in engagement with said top guard plate, said clamping member filling the space between said looplike members and its legs em-

bracing the sides of said arm and contacting said top guard plate to prevent ingress of fragmentary matter into said mounting and consequent binding of the parts thereof.

2. A rotary grass cutter of the class described having a rotatable cutting blade, a relatively stationary generally circular top guard plate disposed above said blade, operating means including a motor supported on said top guard plate, a first relatively wide extension projecting from said top guard plate rearwardly and angularly downwardly forming a peripherally arcuate downwardly directed apron in the rear thereof for catching objects dislodged by said blade incident to the cutting operation thereof and deflecting such objects downwardly for deposit on the ground away from the operator, the lower edge of said apron forming an arcuate generally laterally disposed skid, a second extension projecting from said top guard plate radially forwardly and angularly downwardly to form an arcuate deflector for directing ground growth inwardly toward said cutting blade for cutting thereby, the lower edge of said deflector being rounded and forming a companion arcuate generally laterally disposed skid, said skids being in engagement with the ground in the operation of said cutter and having the triple function, first, of supporting the entire cutter including the operating means supported on said top guard plate; second, of protecting the rotating blade and operating parts thereof against contact with the ground; and third, of facilitating the lateral sideways manipulation of the cutter by the operator.

HENRY C. DREISCHERF.

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