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M. R. SEHM

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GUARD FINGER AND LEDGER PLATE

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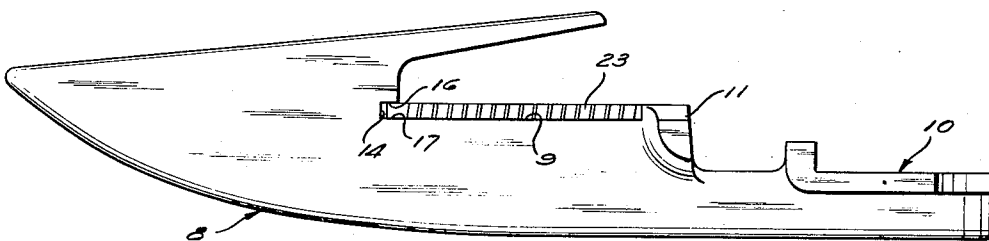
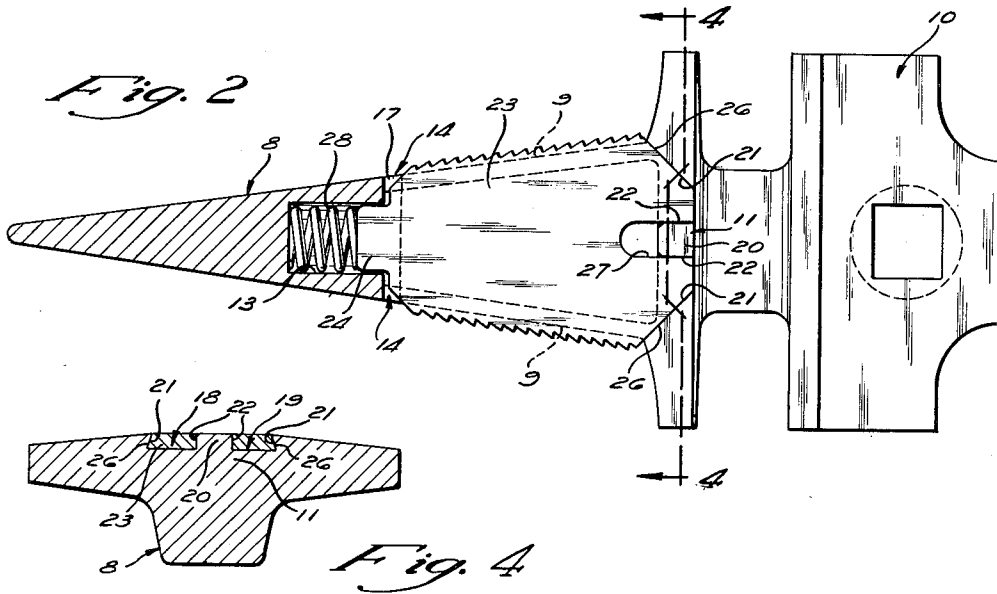
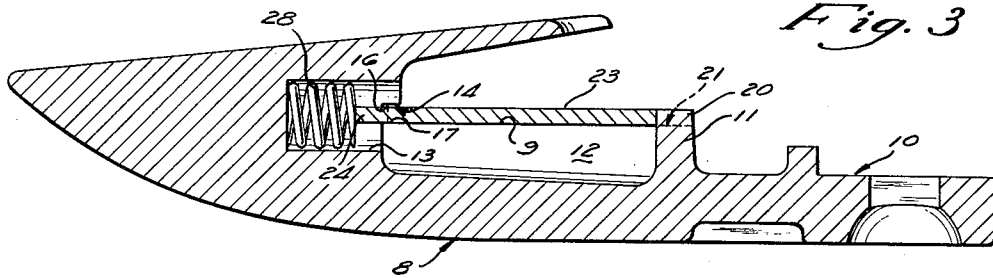


Fig. 1

INVENTOR.
MARTIN R. SEHM

BY
RICHEY, MCNENNY & FARRINGTON
H. F. McNenny
ATTORNEYS

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GUARD FINGER AND LEDGER PLATE

Martin R. Sehm, Peoria, Ill., assignor to R. Herschel Manufacturing Co., Peoria, Ill., a corporation of Illinois
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This invention relates to a new and improved guard finger and ledger plate assembly suitable for use on high speed power driven mowing machines.

In the United States patents to Hover, No. 1,494,308, dated May 13, 1924 and 1,753,293, dated April 8, 1930, a guard finger and ledger plate assembly is illustrated which permits the insertion or removal of the ledger plate without the requirement of special tools or the like. The structures illustrated in these two patents have operated satisfactorily in the past on horse drawn mowing equipment and early power driven mowers. Such a structure has been found, however, to be unsatisfactory when the operating speed of the mower is increased to the high operating speeds of present day power driven mowing machines.

A guard finger and ledger plate assembly incorporating this invention maintains all of the advantages of assembly and disassembly provided by the structure of the Hover patents cited above and in addition, operates to securely mount the ledger plate in a manner which will permit extremely high speed operation.

It is an important object of this invention to provide a novel and improved guard finger and ledger plate assembly which permits the easy installation or removal of the ledger plate without requiring special tools.

It is another important object of this invention to provide a novel and improved guard finger and ledger plate assembly wherein the ledger plate is positively locked in position against all vibration or operating loads so that the assembly can be used on mowers which are operated at high speeds.

It is still another object of this invention to provide a novel and improved structure for mounting ledger plates on guard fingers of mowing machines wherein the ledger plate is positively secured against lateral motion so that the mowing machine on which the assembly is mounted can be operated at higher speeds.

It is still another object of this invention to provide a novel and improved mounting structure for ledger plates on guard fingers which can be easily snapped into position or pryed out of position for assembly or disassembly without the need of special tools.

Further objects and advantages will appear from the following description and drawings wherein:

FIGURE 1 is a side elevation of a guard finger and ledger plate assembly incorporating this invention;

FIGURE 2 is a plan view partially in section illustrating the structure which provides positive lateral support of the ledger plate;

FIGURE 3 is a side elevation in longitudinal section showing the ledger plate installed on the guard finger; and

FIGURE 4 is a cross-section taken along 4—4 of FIGURE 3.

Referring to the drawings, the guard finger 8 is preferably formed of a unitary casting having a seat 9 for a ledger plate. The rearward end 10 of the finger is shaped to permit the finger to be mounted on a mowing machine. An upstanding portion 11 forms the rearward portion of a cavity 12 best illustrated in FIGURE 3, which extends forward to an axial bore 13. The guard finger is formed with a lateral notch 14 extending horizontally on opposite sides of the bore 13 and providing upper and lower opposed faces 16 and 17.

The upstanding portion 11 is formed with two similar

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but opposite recesses 18 and 19. The outer walls 21 of each recess 18 and 19 are underbeveled and converge with each other as illustrated in FIGURES 2 and 4. The inner walls 22 of each recess 18 and 19 are vertical and extend parallel to the axis of the guard finger, thus defining a lug 20 between the inner walls 22 of the recesses.

A ledger plate 23 is positioned on the seat 9 over the cavity 12 with its forward end projecting into the lateral notch 14 and an axial projection 24 extending into the bore 13. The lateral width of the projection 24 is substantially equal to the diameter of the bore 13 so that the forward end of the ledger plate 23 is laterally supported by the engagement of the projection 24 and the wall of the bore 13. Vertical position of the forward end of the ledger plate 23 is maintained by the faces 16 and 17 of the notch 14 so the forward end of the ledger plate is locked against all but axial motion.

The rearward end of the ledger plate 23 is formed with complementary converging bevel surfaces 26 which engage the underbeveled walls 21. The ledger plate 23 is also formed with an axially extending central notch 27 which engages the opposed parallel inner walls 22.

A spring 28 is positioned in the bore 13 and is proportioned so that its rearward end is spaced forward from the lateral notch 14 when the spring is unstressed. The length of the axial projection 24 on the ledger plate 23 is proportioned so that it engages the spring 28 and compresses it when the ledger plate 23 is moved forward to the mounted position illustrated. Therefore, the action of the spring 28 on the end of the projection 24 serves to urge the ledger plate rearwardly causing the beveled surfaces 26 on the ledger plate to tightly engage the underbeveled walls 21. The interaction of the beveled faces 26 and the underbeveled walls 21 serves to lock the ledger plate 23 against upward movement at its rearward end. In addition, the interengagement between the sides of the notch 27 and the parallel walls 22 prevents lateral movement of the ledger plate at its rearward end. Thus, the ledger plate is restrained against both lateral and vertical movement at its rearward end by positive engagement between the complementary faces.

The notch 27 extends forward from the upstanding portion 11 to permit the insertion of a tool to remove or install the ledger plate. To remove the ledger plate from the guard finger, it is merely necessary to insert any punch-like tool into the notch 27 in front of the upstanding portion 11 and pry the ledger plate forward and up. The forward movement compresses the spring and moves the beveled surfaces 26 clear of the underbeveled walls 21 and permits vertically upward movement of the rearward end of the ledger plate. As soon as such clearance is achieved, the ledger plate is free to move upward and then back to complete the removal.

During assembly of the ledger plate, the tool is rotated forward to pry the ledger plate forward and down. Since the spring 28 is spaced forward from the lateral notch 14 in its unstressed condition, the projection 24 extends into the bore 13 prior to the compression of the spring 28 to insure proper positioning of the ledger plate during assembly.

It should be understood that both the forward and rearward ends of the ledger plate 23 are positively locked against lateral movement by axially extending walls which engage corresponding or complementary walls on the guard finger. The forward end of the ledger plate is locked against lateral movement by the engagement between the projection 24 and the wall of the bore 13 and the rearward end by the engagement between the walls of the notch 27 and the inner walls 22. During high speed operation of a mowing machine, the vibrations are primarily lateral in direction so that these positive mechanical engagements of the walls prevent the ledger

plate from vibrating relative to the guard finger in a lateral direction. Therefore, the spring is not loaded or compressed by components of vibrating forces and the ledger plate is securely maintained in position regardless of the speed of operation.

Although a preferred embodiment of this invention is illustrated, it will be realized that various modifications of the structural details may be made without departing from the mode of operation and the essence of the invention. Therefore, except insofar as they are claimed in the appended claims, structural details may be varied widely without modifying the mode of operation. Accordingly, the appended claims and not the aforesaid detailed description are determinative of the scope of the invention.

What is claimed is:

1. In a device of the character described in an elongated guard finger having an elongated ledger plate seat having a front and a rear end, a lateral notch in said guard finger at the front end of said seat providing a lateral wall parallel to said seat, a bore in said guard finger at said front end of said seat, said guard finger having upstanding portions defining a pair of opposed rearwardly converging underbeveled walls in said guard finger at the rear end of said seat, a lug mounted between said pair of said converging walls and having a pair of parallel opposed axial walls on said guard finger at said rear end of said seat, both of said parallel axial walls extending normal to the plane of said seat, a rigid ledger plate on said seat, a pair of complementary rearwardly converging beveled surfaces on said ledger plate with one engaging each of said underbeveled walls preventing movement of said ledger plate away from said seat, a pair of parallel axial surfaces on said ledger plate with one engaging each of said axial walls on said lug

preventing lateral movement of said ledger plate at said rear end of said seat, said ledger plate extending into said notch engaging said lateral wall preventing movement of said ledger plate away from said front end of said seat, a projection of said ledger plate extending into said bore engaging the wall thereof and preventing lateral movement of said ledger plate at said front end of said seat, and a spring in said bore engaging said projection resiliently urging complementary beveled surfaces into engagement with said converging underbeveled walls.

2. A device as set forth in claim 1 wherein said spring and bore are proportioned so that said spring is spaced forward along said bore of said notch when said spring is unstressed.

3. A device as set forth as in claim 1 wherein said pair of parallel axial surfaces on said ledger plate form a slot having an axial length greater than that of said lug whereby the front edge of said slot is spaced from the front edge of said lug when said ledger plate is positioned with said complementary beveled surfaces in engagement with said converging underbeveled walls to provide an opening for insertion of a tool adapted to move said ledger plate toward said spring thereby moving said complementary beveled surfaces out of engagement with said converging underbeveled walls to permit movement of said ledger plate normal to said seat at said rear end thereof.

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