P. W. BLAKE.

STRIP SERVING DEVICE.

APPLICATION FILED JAN. 2, 1909.

1,229,403. Patented June 12, 1917.

Fig. 1.

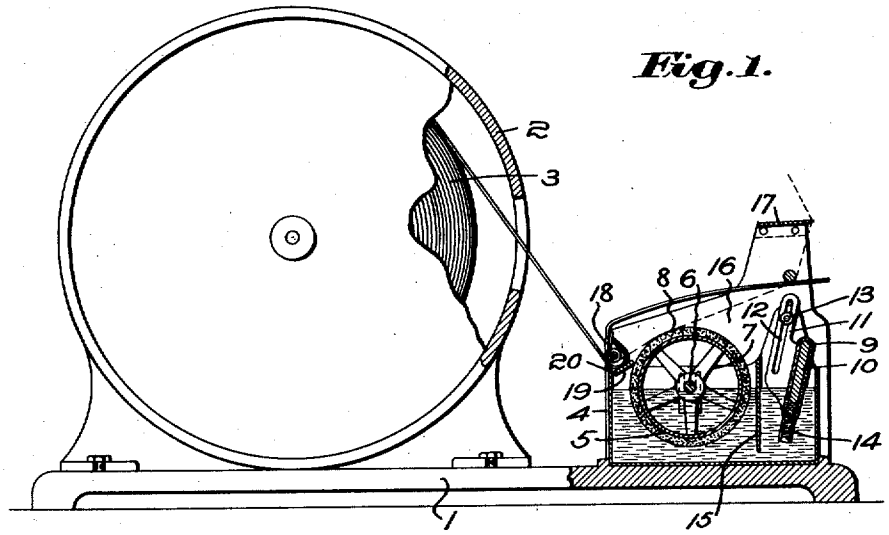


Fig. 2.

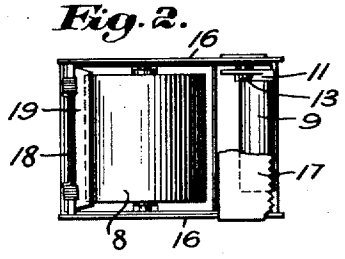


Fig. 3.

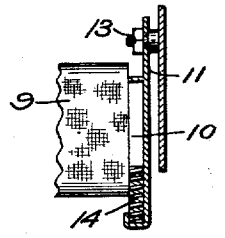


Fig. 4.

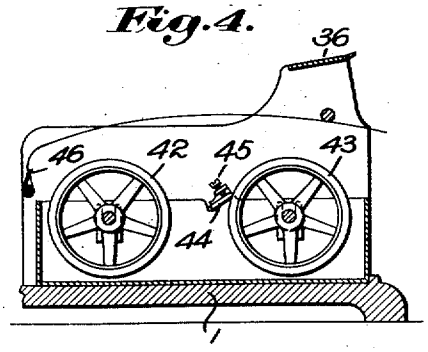
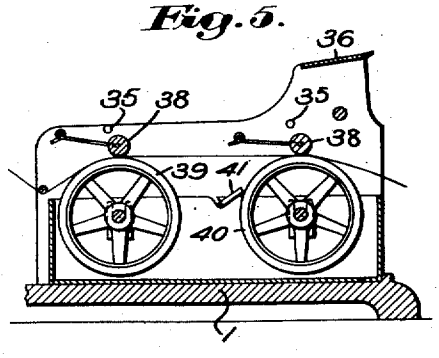


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM T. BUTCHER, OF UPPER LAKE, CALIFORNIA.

MOWER-KNIFE SHARPENER.

1,228,403. Specification of Letters Patent. Patented June 5, 1917.

Application filed November 2, 1915. Serial No. 59,289.

To all whom it may concern:

Be it known that I, WILLIAM T. BUTCHER, a citizen of the United States, residing at Upper Lake, in the county of Lake and State of California, have invented certain new and useful Improvements in Mower-Knife Sharpeners, of which the following is a specification.

My invention relates to mowers and more particularly to an improved knife sharpening device or attachment therefor.

An object of the invention is to associate with each of the several blade guards of the mower, a sharpening or grinding member whereby, during reciprocation of the knife or cutting blade, said member, if desired, may contact with the opposite angular cutting edges thereof to in such manner sharpen or grind said blade.

A further object of the invention is to provide an improved means for moving said grinding member into and out of operative relation with the said cutting blade.

A still further object of the invention is to generally improve in the construction of the several blade guards.

The above and additional objects are accomplished by such means as are illustrated in their preferred embodiment in the accompanying drawings, described in the following specification and then more particularly pointed out in the claims which are appended hereto and form a part of this application.

In describing my invention in detail reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a section of the cutter bar;

Fig. 2 is a top plan view, one of the blade guards being shown in section;

Fig. 3 is a similar view illustrating the movement of the knife or cutter blade;

Fig. 4 is a view similar to Fig. 1, the blade guards forming a part of the mower being in this view shown in elevation;

Fig. 5 is a cross section of one of the blade guards;

Fig. 6 is an end view of the grinding member; and

Fig. 7 is a plan view of the reciprocating bar utilized to directly oscillate the grinding member.

Referring now to the drawings by numerals, 1 designates the cutter bar of a mower, 2 as an entirety the several blade guards, 3 as an entirety the mower knife or cutter blade, 4 as an entirety the grinding member associated with each guard 2, and 5 as an entirety the bar utilized to move the several members 4 into and out of operative relation with the cutter blade.

The cutter bar 1 is provided with a plurality of uniformly spaced transversely disposed slots 6 through each of which an arm 7 (hereinafter described) extends. The bar 5 above mentioned is mounted for longitudinal movement beneath the cutter bar 1 so that the grinding members 4 may be moved from an operative to an inoperative position and vice versa. Said bar 5 is provided with a plurality of angularly disposed slots 8, said slots 8 corresponding in number to the slots 6 before mentioned and into each of which one of the arms 7 extend. The walls defining the opening 6 will preclude lateral displacement of the arms 7 while the slots 8, by reason of their angular displacement with regard to the longitudinal direction of the bar 5 will impart, during movement of said bar, the desired movement to said arms.

The knife or blade 3 of the mower is of an accepted construction or design, and as shown, consists of a plurality of detachable blade sections 9, each section being of a substantially triangular formation.

The several blade guards 2 being of a duplicate construction a description of but one will ensue. Each guard 2 may be said to consist of a suitable casing 11, longitudinally divided as indicated at 12 to provide an operating space for the knife 3, the bar 5, and for the reciprocating bar 13 to which said knife is attached. As evidenced by reference to Figs. 1 and 5 of the drawings, the guard 2 is hollow and of such vertical dimension as to inclose and thus protect the blade grinding members 4. Said guard 2 is attached to the cutter bar 1 as indicated at 14.

Coming now to a description of the blade sharpening or grinding members 4, it is to be understood that each guard 2 incloses one of said members, there being a corresponding number of blade sections 9, guards 2 and members 4. The several members 4, like the guards 2, being of a duplicate construction, the description following is pertinent to all. The arm 7, hereinbefore mentioned, is pivoted as at 15 interiorly of

the guard and at a point directly above the cutter bar 1. Said arm 7 has attached thereto a plate spring 16 which carries at its forward end a grinding stone 17 (preferably carborundum). The said stone 17 is provided with a rounded engaging surface so that the two edges of the knife section 9 may engage therewith. The section 9 as it is reciprocated will also engage with and slide upon the top surface of that portion of the guard 2 divided as indicated at 12.

In operation, the blade or knife 3 is reciprocated through the agency of any suitable power means. When it is desired that the sections 9 constituting the blade or knife 3 be sharpened, it is but necessary to move bar 5 beneath the cutter bar 1 a sufficient distance to so act upon the arms 7 and the sharpening member 17 as to move the latter into yielding frictional contact with the cutting blade. The angular disposition of the slot 8 in the bar 5 will move the arms 7 in the manner desired. The sharpening device or element 17 being in yielding contact with the cutting blade it is evident that reciprocation of the latter beneath said element will cause said element to alternately engage with the opposite angular edges of the blade sections and by reason of such engagement grind and sharpen the blade. The spring support 16 for the grinding element will act to maintain said element in contact with the blade. When it is desired that the grinding element be withdrawn from contact with the cutting blade it is but necessary to reversely move the bar 5 in which event the arm 7 is moved into the position indicated by the dotted lines in Fig. 1 of the drawings whereupon element 17 is raised and entirely withdrawn from engagement with the cutting blade.

From the foregoing, taken in connection with the accompanying drawings it is evident that the removal of the knife 3, to sharpen, is unnecessary; that the guards 2 not only perform the inherent function of directing grain, grass or other growth to the knife 3, but, by reason of their particular formation, inclose and protect the several grinding members 4; and that the disposition and formation of the slots 8 is of such a nature as to move the grinding devices 17 into and out of operative relation with the cutting blade.

In reduction to practice, I have found that the form of my invention, illustrated in the drawings and referred to in the above description, as the preferred embodiment, is the most efficient and practical; yet realizing that the conditions concurrent with the adoption of my device will necessarily vary, I desire to emphasize the fact that various minor changes in details of construction, proportion and arrangement of parts may be resorted to, when required, without sacrificing any of the advantages of my invention, as defined in the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a mowing apparatus, the combination with a finger bar and fingers extending therefrom, of a cutter bar mounted for reciprocation, knives secured thereto, a sharpening element mounted within each finger, and means for simultaneously shifting the sharpening elements into position for engagement by the adjacent knives during their reciprocation.

2. In a mowing knife sharpener, a grinding element mounted for movement into and out of operative association with the mower knife, and a means to move the grinding element in the manner stated including a diagonally slotted bar mounted for longitudinal reciprocatory movement in proximity to said grinding element, and means on the grinding element engageable by the walls of the slot in said bar.

3. In a mowing knife sharpener, a grinding element mounted for movement into and out of operative association with the mower knife, means yieldingly maintaining the grinding element in engagement with the mower knife subsequent to movement to operative association therewith, and a diagonally slotted bar movable in a direction transverse to the movement of the grinding element and means on the grinding element engageable in the slot of said bar to move said element in the manner stated.

4. In a mower knife sharpener, a grinding element mounted for movement into and out of operative association with the mower knife, a pivoted arm, a connection between said pivoted arm and grinding element, and a diagonally slotted reciprocal bar the arm engaging the walls of the slot to move said element in the manner stated.

5. In a mower knife sharpener, a reciprocable knife, a transversely slotted cutter bar, a diagonally slotted bar mounted for movement beneath said cutter bar, a pivoted arm mounted with its free end engaging in said diagonal slot and said transverse slot, a resilient supporting plate fastened at one end to said arm, and a grinding element mounted at the free end of said resilient plate to yieldingly engage with the mower knife in a determined position of the diagonally slotted bar.

6. In a mower knife sharpener, a grinding element mounted for movement into and out of operative association with the mower knife, a resilient supporting plate for said grinding element mounted for pivotal movement with respect to the mower knife, an arm mounted to extend at a right angle to said supporting plate, a relatively fixed cutter bar provided with a transverse slot

through which the mentioned arm extends, and a reciprocal bar carried beneath said cutter bar and provided with a diagonal slot through which said arm extends, movement of said last mentioned bar controlling movement of the grinding element substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM T. BUTCHER.

Witnesses:
FRANK HOWE,
J. B. ROBINSON.