

No. 647,140.

G. W. KISSINGER.  
MOWING MACHINE.

Patented Apr. 10, 1900.

(No Model.)

(Application filed Aug. 1, 1899.)

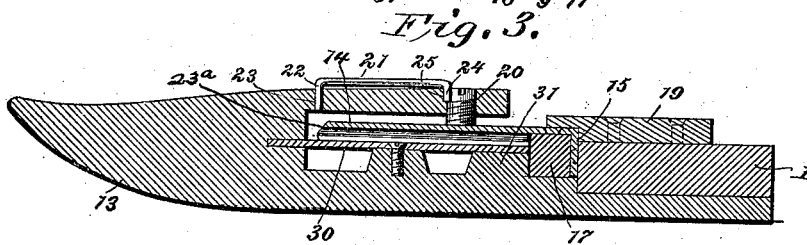
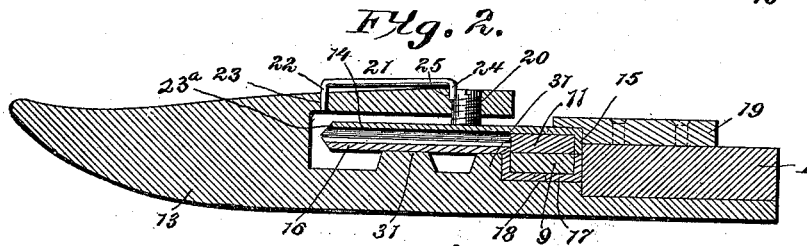
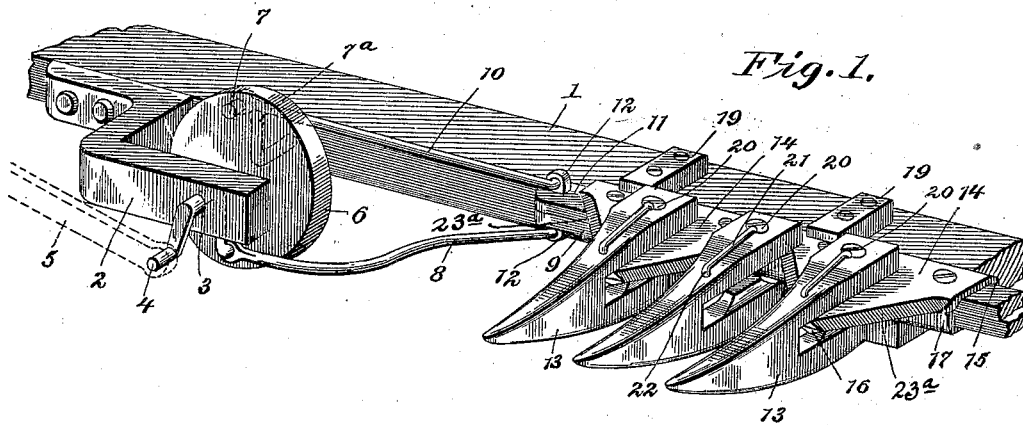


Fig. 4.

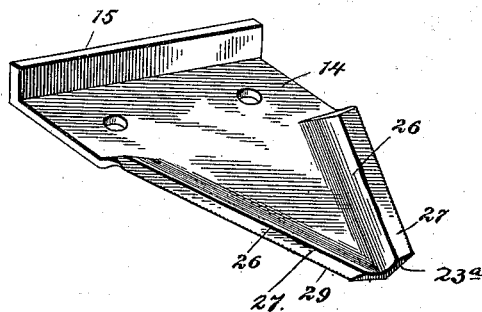
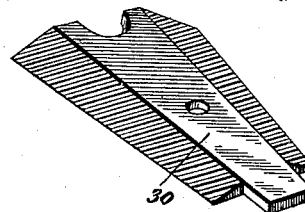


Fig. 5.



Witnesses

Howard D. Orr.

Chas. S. Hoyer.

G. W. Kissinger, Invention.

By his Attorneys,

Chas. S. Hoyer.

# UNITED STATES PATENT OFFICE.

GEORGE W. KISSINGER, OF JACKSON, WYOMING, ASSIGNOR OF ONE-HALF  
TO WILLIAM PRESTON REDMOND AND JOHN G. FISK, OF SAME PLACE.

## MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,140, dated April 10, 1900.

Application filed August 1, 1899. Serial No. 725,775. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. KISSINGER, a citizen of the United States, residing at Jackson, in the county of Uinta and State of Wyoming, have invented a new and useful Mowing-Machine, of which the following is a specification.

This invention relates to mowing-machines, and more particularly to the cutting mechanism therefor, and aims to render such devices more efficient in their operation by obviating any clogging tendency due to a lodgment of material between the knives, materially reducing the frictional contact of the parts, and provides means for easy assemblage or disconnection and also affords advantages in sharpening cutting edges.

A further intent and purpose of the improved construction is to enable the knife to cut better and without a drag or pull, to keep sharp longer, and to work easier than when constructed in the ordinary manner.

The invention consists in the construction and arrangement of the several parts, as will be hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a part of the cutting mechanism of a mower embodying the features of the invention. Fig. 2 is a transverse vertical sectional view through one of the fingers and the knives, as well as supporting parts therefor. Fig. 3 is a transverse vertical section illustrating a different form of the device, but embodying the same principle in the main. Fig. 4 is a detail perspective view of one of the knives looking toward the inner side thereof. Fig. 5 is a detail perspective view of the improved form of ledger-plate embodied in the construction shown by Fig. 3.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates the finger-bar, which may be of any preferred length and width and has at one end thereof, adjacent the point of attachment to the machine, an outstanding angular bearing-arm 2, in which is journaled a crank 3, having a terminal crank-pin 4 on one end for attachment to a pitman 5 (shown in dotted lines) and actu-

ated by the mechanism of the machine. The inner end of the crank 3 is eccentrically secured to an interposed disk or head 6, and, referring now more particularly to Fig. 1, the said disk or head 6 is also provided at a diametrically-opposite point with a wrist-pin or analogous device 7. The portion of the crank 3 which is secured to the head or disk 6 also serves as a wrist, and thereto is movably secured the inner end of a link-rod 8, which extends outward and is movably attached at its outer terminal to a reciprocating bar 9. To the wrist-pin 7 one end of another link 10 is movably fastened and has its outer terminal also movably fixed or connected to a reciprocating bar 11, in parallel relation to the bar 9 and superimposed thereon.

The links 8 and 10 are preferably secured to the bars 9 and 11 by apertured lugs 12, though other means might be adopted, if desired, as long as a movable reception for the outer ends of the said link-rods is instituted.

The finger-bar 1 has in this instance, as in the ordinary forms of cutting devices of this character, a series of fingers 13, which are transversely slotted adjacent their points of attachment or extension from the finger-bar. To the bar 11 a series of knives 14 are secured and have rear shoulder extensions or flanges 15, which take over the rear edge of said bar. The bar 9 also has a series of knives 16 fastened thereto, each of the latter knives being provided with a semibox extension 17 at its inner end, in which the said bar 9 rests and is secured. The knives 14 and 16 are in reverse position and move or reciprocate in opposite directions when the cutting mechanism is set in motion. The box extensions 17 of the lower knives 16 travel or vibrate in seats 18 at the rear lower portions of the fingers 13, and the inner portions of the knives 14 are held down adjacent the finger-bar 1 by end shouldered blocks or guides 19. The head or disk 6 is also attached at the opposite side by a crank 7<sup>a</sup>, having bearing in the finger-bar 1 and of which the wrist-pin 7 is a continuation, and is held in proper relation by the link-rods 8 and 10, which are fastened thereto at diametrically-opposite points, as indicated. Consequently when the crank 3 is actuated the disk or head 6 is rotated, and

the link-rods 8 and 10 alternately move in reverse directions, so that the bars 9 and 11 will slide or vibrate in alternate reverse directions and operate the knives 14 and 16 in a similar manner. Through the medium of this construction the movement is easy and gradual and the pound or injurious jerk of the ordinary form of pitman having a direct connection to the reciprocating bars is absent, and the specially-related parts will respond more fully and easily to the impulse of the actuating mechanism.

It will be observed that both sets of knives are secured to their reciprocating bars, and in removing said bars the knives will be simultaneously withdrawn therewith, and, on the contrary, in reassembling said parts all the knives will be properly positioned by one operation. The bars 9 and 11 are also shielded by the shoulder or flange extension 15 and the semibox extensions 17, and the congregation or collection of grit or other materials in and around or between the bars is prevented.

To prevent the knives from separating while operating, adjusting-screws 20 are mounted in the inner portions of the fingers 13 above the upper set of knives 14 and, as clearly shown by Fig. 2, have inner squarely-cut ends, which are adapted to bear upon said upper set of knives to thereby hold both sets of knives in close contact. The degree of impinging compression between the knives 14 and 16 is regulable by the extension or projection of the said screws 20, and after the several screws have been brought into engagement with the upper set of knives to a desired degree they are held against loosening by keys 21, consisting, preferably, of wire loops having outer legs 22, movably mounted in openings 23 in the upper parts of the fingers 13, and have also inner locking-noses 24, which are pushed down into recesses 25, communicating with the screw-threaded openings in which the screws 20 are adjustably seated, said openings being partially formed in the said screws. These keys 21 are disengaged from a locking position by slightly elevating the same until the noses 24 are clear and swinging the same to one side to permit the screws to be turned and the adjustment thereof varied, and afterward the keys are then returned to the locking position, as shown.

The knives 14 and 16 have their inner faces hollowed out or concaved, as shown by Fig. 4. Both knives are similar in construction in this particular and differ only in the formation of the shoulder or flange 15 and the box extensions 17. By hollowing out or concaving the knives on their inner faces opposite converging inner bearing-ledges 26 are provided, which have horizontal contacting faces 27. The intersection of the faces 27 with the beveled edges 23<sup>a</sup> on the outer sides of the knives establishes the opposite cutting edges 29.

It will be observed that the sharpening op-

eration of the several cutters is materially aided by the formation of the faces 27 as the latter are brought to bear against the sharpening tool or device, and by cutting off the metal at this point a sharp edge can be more quickly and conveniently attained than grinding off the outer bevels. It is not intended that the outer bevels in the present form of knife be ground off, as said bevels are primarily serrated or slightly corrugated regularly in a transverse direction, and the said corrugations continuing to the cutting edges 29 make the latter rough or broken to a minute degree and advantageously assist in the cutting operation of the knives, as will be readily appreciated by those skilled in the art. This form of cutting edge will remain sharp for a longer period than the straight or unbroken cutting edge and is less liable to be dulled in coming in contact with stones or other resisting materials that may be thrown thereagainst during the operation and travel of the cutting mechanism.

The reduced contact-surfaces of the upper and lower knives are also of considerable import in that the frictional resistance is reduced and the mechanism will run lighter. Furthermore, by this arrangement if materials should happen to clog or get between the knives the latter will not be spread apart and will more uniformly maintain their initial adjustment. The outer terminals of the ledges 26 do not connect, but are separated, and the unconnected end of each knife being cut across or blunted, as in ordinary devices of this character, an egress-opening is formed, through which under certain conditions any material that might clog between the knives can work out.

The construction shown by Fig. 3 embodies the fingers 13, the finger-bar 1, and the shouldered blocks or guides 19, similar to the form just described. In this modification the lower line of movable knives is replaced by a series of stationary ledger-plates 30, which are fastened in the ordinary manner and have a series of movable knives similar to those heretofore designated 14, freely reciprocable thereover. The opposite edges of the ledger-plates 30 are beveled and serrated or corrugated similar to the knives, and the inner sides of said plates, or those adjacent the knives that move thereover, are hollowed out to present bearing-faces corresponding in contour to those of the said knives. The adjusting-screws 20 and keys 21 are also employed in this instance, and to operate the single set of reciprocating knives it will be understood that a single eccentric and link rod may be utilized.

The first-described form of the device is deemed the most important, as it gives the best results and materially overcomes the numerous disadvantages heretofore encountered in devices of this character. The fingers 13 are shown as provided with upstanding bearing projections 31, which are alined

in inner and outer positions, and in the use of the lower set of movable knives the frictional contact is gradually reduced by such upstanding projections as compared to the ordinary mode of bringing the knives to bear upon the base-walls of the openings in the fingers.

Numerous other advantages will appear from time to time to those using the improved construction, and changes in the proportions, size, and minor details of construction and arrangement might be resorted to without departing from the nature of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. In a device of the character set forth, the combination of upper and lower sets of relatively-coacting reciprocating knives, both sets of knives being fixed to their support without adjustable movement, a finger-bar for supporting said knives and having fingers projecting therefrom with slots therein, adjusting-screws mounted in the upper rear portions of the said fingers and bearing upon the upper set of knives, and keys consisting of devices having pivotal legs bearing in the top portions of the fingers and inner noses to enter recesses communicating with the openings for the screws, said recesses being partially formed in said screws.

2. In a device of the character set forth, the combination of a finger-bar, upper and lower sets of knives movably mounted on the fin-

ger-bar and secured to independently-moving, reversely-operating upper and lower reciprocating bars, a rotatable disk or head having a crank eccentrically attached thereto, said crank being journaled in the finger-bar concentric to the disk, a wrist-pin on the disk or head diametrically opposite the point to which the crank is applied, another crank similarly journaled with respect to the disk and connected to said wrist-pin, said disk or head being without other bearing devices, and link-rods extending from the wrist-pin and the crank attachment of the said disk or head to the said reciprocating bars.

3. In a device of the character set forth, the combination of a finger-bar, a lower reciprocating bar relatively mounted against said finger-bar, a series of knives having rear box-like extensions in which the said reciprocating bar is fitted, an upper reciprocating bar mounted on the aforesaid reciprocating bar, an upper set of knives having rear shouldered extensions to take over the upper reciprocating bar, guides on the finger-bar, and means for operating said reciprocating bars to impart a reverse motion thereto.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE W. KISSINGER.

Witnesses:

IDA S. REDMOND,  
WILL L. SIMPSON.