

JOHN J. BULFINCH & FRANK BULFINCH.

Improvement in Mowing Machines.

No. 123,864.

Patented Feb. 20, 1872.

Fig. 1.

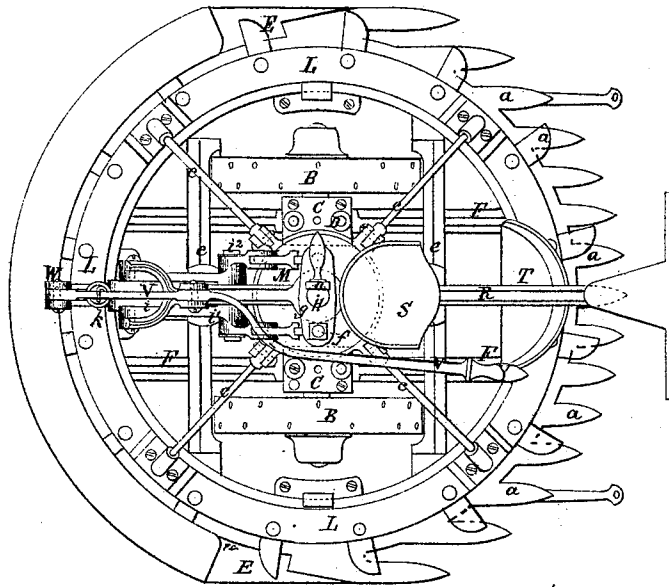
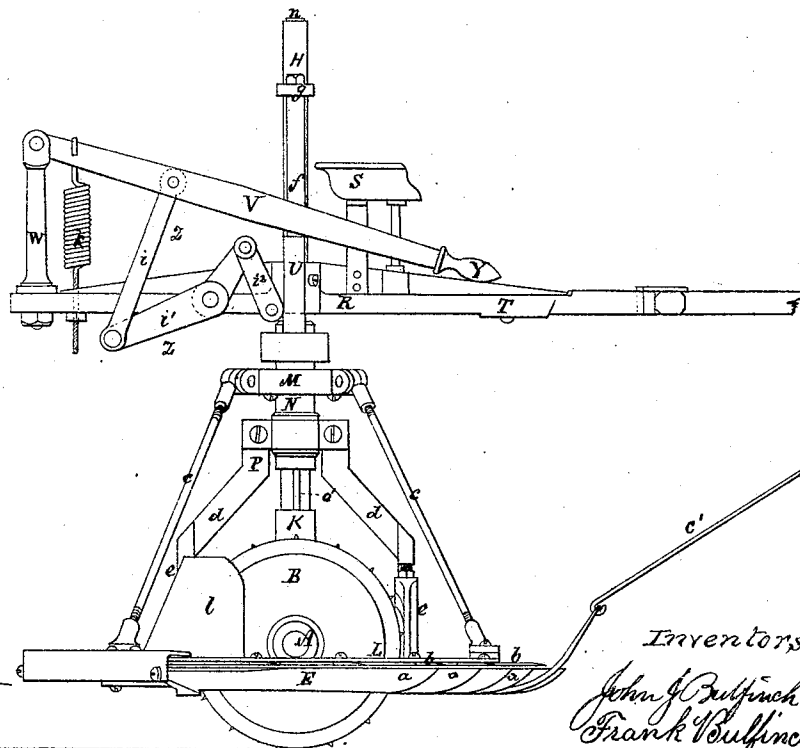


Fig. 2.



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J. E. Smith

Inventors:
John J. Bulfinch
Frank Bulfinch

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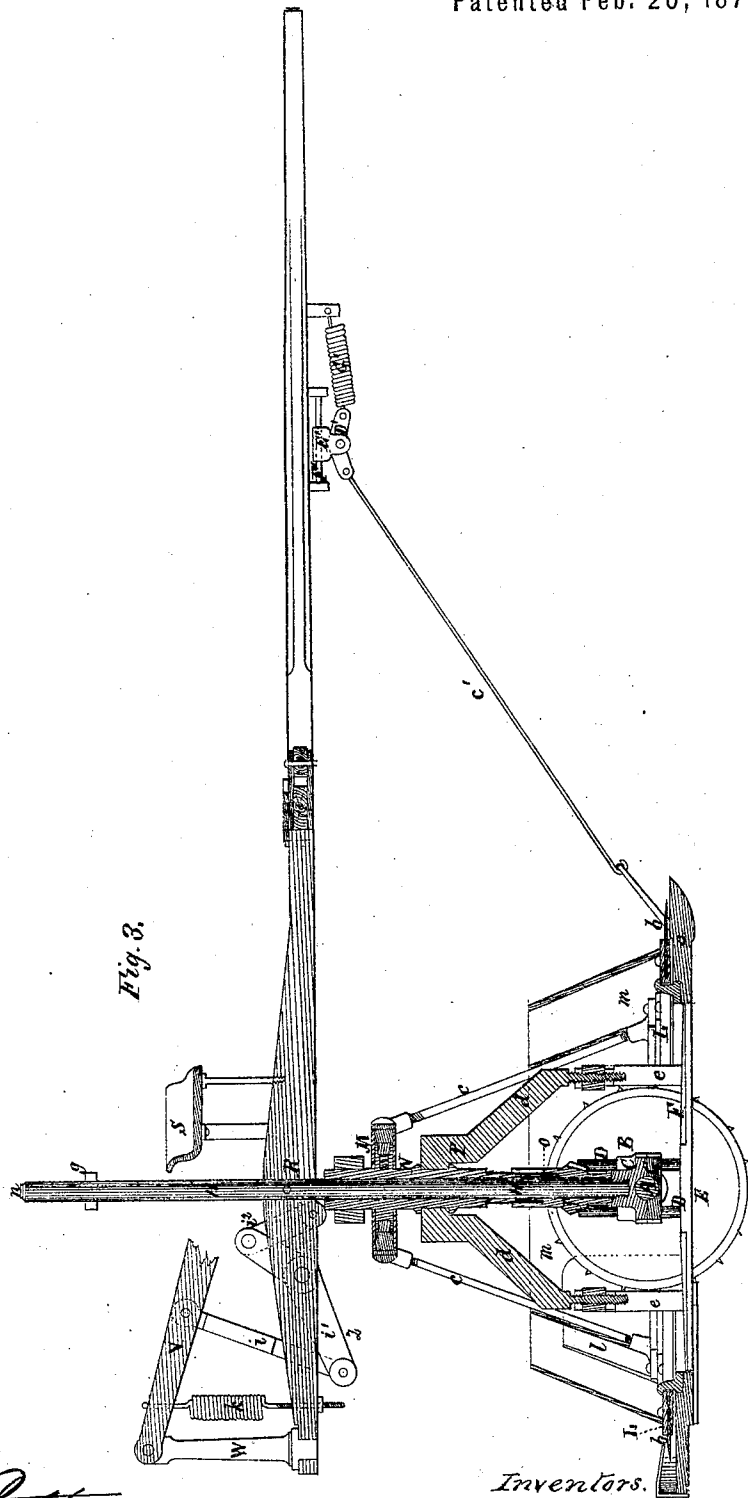


Fig. 3.

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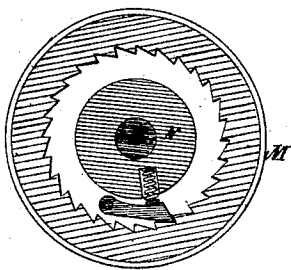
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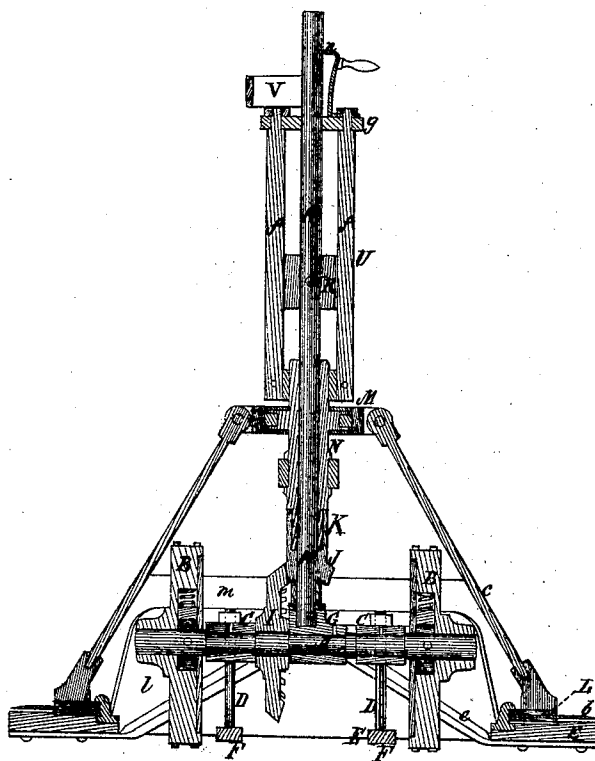
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Fig. 4.



UNITED STATES PATENT OFFICE.

JOHN J. BULFINCH, OF FREEPORT, AND FRANK BULFINCH, OF WALDOBOROUGH, MAINE.

IMPROVEMENT IN MOWING-MACHINES.

Specification forming part of Letters Patent No. 123,864, dated February 20, 1872.

To all to whom these presents shall come:

Be it known that we, JOHN J. BULFINCH, of Freeport, in the county of Cumberland, and FRANK BULFINCH, of Waldoborough, in the county of Lincoln, both of the State of Maine, have made an invention of certain new and useful Improvements in Mowing-Machines; and do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, and in which—

Figure 1 is a plan; Fig. 2, a side elevation; Fig. 3, a vertical, central, and longitudinal section; and Fig. 4, a vertical and transverse section of a mowing-machine embracing our improvements.

This machine is a rotary one—that is to say, the series of movable cutters or teeth revolve above and about the comb, which is a semicircular or segmental comb, the cutters being attached to the periphery of a circular annular plate, which is properly supported, and revolves (when shipped into cutting position) above a bed-plate whose front portion is a segment of a circle, the teeth of the comb being formed upon or attached to the edge of such bed-plate.

The drawing accompanying this specification represents at A the axle or main supporting-shaft of the machine, to the outer ends of which the serrated wheels B are applied in the usual manner of mowing-machines—that is to say, are so connected to the shaft, by a ratchet-and-pawl connection that, upon advance of the machine, the wheels are locked to and drive the shaft, while upon backing of the machine the wheels slip upon and do not actuate such shaft. The shaft or axle A is mounted in boxes C C, which slide vertically upon posts D D, which they encompass, these posts being erected upon the base or bed-plate of the machine, which is shown at E, this bed-plate, as represented, being an open frame, nearly circular in form, and provided with two central cross-bars, F F, which support the posts D D before named, the central inclosure of the frame E surrounding the shaft A, and wheels B B, while the posts permit the raising of the frame from off the ground and prevent its rotation. In addition to the boxes C C, in which the shaft A is mounted, a second box or block, G, encompasses the shaft, this block being disposed midway of the boxes C

C and the bed-plate E, and of the general structure of the machine, and has erected upon it a long upright post or cylindrical rod, H, upon which the greater portion of the operative parts of the machine are supported. I represents a bevel-gear affixed to the shaft A and alongside the block G, while, meshing into this gear, we dispose over the block an upright beveled pinion, J, which constitutes the lower part of a tubular sleeve, K, which encompasses and freely revolves about the post H. This pinion is kept from rising on the standard and, at the same time, permitted to revolve by means of a catch attached at its lower end to the block G, and having its upper end fitted into a groove upon the pinion-sleeve. The beveled gear I and tubular pinion J are connected with and, consequently, revolve at all times with the shaft A. Therefore, when the machine is advancing such gear and pinion are in revolution. The forward portion of the bed-plate E is semicircular in form, and has projecting from it a series of parallel teeth or prongs, *a a*, which constitute the comb, and which enter the grass and present it to the action of the cutters. Although the comb-teeth *a a*, as herein shown, are integral with the bed-plate, they are to be produced separately therefrom and attached in any one of several methods now practiced. The cutter-head of this machine is an annular cylindrical plate, L, the central opening of which coincides with that of the bed-plate E, such cutter-head being disposed immediately over the said bed-plate, and being concentric therewith, and provided upon its periphery with a series of radially-projecting knives or cutters, *b b*, &c., secured to it in any proper manner. The cutter-head L is suspended over the bed-plate by means of several rods, *c c*, the lower ends of which are adjustably attached to it, while their upper ends are connected to a head or disk, M, which is secured, by a pawl-and-ratchet connection, to an upright tubular shaft, N, such shaft, in turn, encompassing and sliding upon the rod or post H, hereinbefore named, and also having its lower end disposed within the tubular sleeve K, a spline, *o'*, being formed upon one side of the lower part of the tubular shaft N, which operates with a groove, *o*, formed in the inner periphery of the tubular sleeve, K, to lock the two together, under conditions

hereinafter named, and so that the revolution of such sleeve and attached pinion shall effect a corresponding revolution of the tubular shaft and of the disk M and cutter-head L. The base or comb-plate E is also suspended from the tubular shaft N by means of a forked cross-head, P, the arms *d d* of which are secured to arched bars *e e*, which constitute part of or are attached to the said comb-plate; but while the cutter-head revolves with such shaft N the comb-plate does not, but is stationary with respect thereto, the shaft revolving within the cross-head P, the cutter-head and comb-plate, nevertheless, rising and lowering together in concert with the shaft. The machine contains provision for raising and lowering the comb-plate and cutter-head above the ground when not required for immediate use; and, to effect this elevation and at the same time to stop the revolution of the cutter-head by removing the tubular shaft N from connection with the beveled pinion J, which drives it, we attach to the upright rod or standard H, at about its center, a long horizontal beam, R, which is disposed in the line of draft of the machine, and carries at its front part the driver's seat S and foot-board T; and to its front end the thills are attached. U represents a frame or fork, the posts *f* of which are erected upon the upper part of the tubular shaft N and disposed upon opposite sides of the beam R, while the cross-bar or head *g* of this fork encompasses the standard H and so as to freely slide thereupon, and serves to steady and guide the movements and position of the different parts. The cutter head and comb-plate drop by their combined gravity; and to elevate them at the desired times, when the machine is traveling over the ground and not at work cutting grass, or is turning about, or in other conditions, we have shown herein a device composed of a long hand-lever, V, situated over the beam and pivoted at its rear end to an upright post, W, erected upon the adjacent extremity of the beam R, the forward end of such lever extending to a point in immediate proximity to the driver's seat, and so that the handle Y may be readily grasped by the driver. The lever V is connected to the tubular shaft N or fork U by a knuckle or toggle-joint, Z, composed of three arms, *i i i*, arranged and pivoted, as shown in Fig. 2 of the drawing, by means of which the driver can, at pleasure, elevate the comb-plate and cutter-head from off the ground, their own gravity causing them to drop, when the lever is released; or, to make sure of this fall, a spring, *k*, may be applied to the lever B and beam R, as shown. An upright guard or shield, *l*, may be secured to the rear part of the comb plate to prevent grass from getting access to and clogging the cutter-head or its knives, and to protect the lower portions of the machine. For a like reason we attach, in an adjustable manner, to the circumference of the cutter-head an annular plate or hood, *m*, which may be removed at pleasure. To maintain the cutter-head and comb-plate and their adjuncts

in their elevated state we apply to the cross-head *g* a suitable spring-catch, *n*, which seizes hold of the top of the standard.

The operation of the machine is as follows: The driver being seated and grasping the lever V, the comb-plate being elevated, as explained, the machine is drawn along the road or over the field, the rotation of the driving-wheels and shaft or axle having no effect upon the cutting mechanism, and merely rotates the gear I and pinion J, the latter turning loosely and freely on the standard H for the reason that its groove is disengaged from the spline of the tubular shaft N. In this manner the machine is drawn along until the grass to be cut is reached, when the driver releases the hold of the spring-catch upon the standard H and permits the comb-plate E and cutter-head L to drop closely to the surface of the turf, which they will do the moment the spline of the tubular shaft N and the groove of the pinion J coincide, as the bore of the pinion is sufficiently deep to admit of reception of the lower end of the tubular shaft. The pinion J and tubular shaft N being thus locked together, the latter rotates with the former, and the cutting mechanism of the machine driven by such shaft is put in operation, as the cutter-head, being secured to the tubular shaft, rotates with it. The teeth of the comb enter the grass and present it to the action of the knives of the cutter-head, the sweep of which in a circular path over and in close contact with those of the comb cuts the grass in a perfect manner. At the close of this labor of cutting grass the driver depresses the handle of the lever V, which has the effect of elevating the comb-plate and cutter-head from off the ground, as before stated, the tubular shaft N and pinion J being, by the act, disengaged and the rotations of the cutter-head thereby stopped, the spring-catch *n* also seizing hold upon the top of the standard H and maintaining the cutting mechanism in its elevated and inactive position until again removed by the driver.

In addition to the construction of this machine as given in this context we apply to each of the shafts C' C' thereof a compensating or yielding draft attachment, by which the thrusts and concussions to which the machine is subject shall be exerted upon the draft animal with less severity than would otherwise be the case. This attachment is shown in Fig. 3 of the drawing as the draft-hook or catch-bar D', fulcrumed or pivoted to a slide, E', which is suspended from and slides upon a rod, F', applied to the under side of each shaft, the outer end of the slider E' being connected to a helical or other spring, G', the opposite extremity of this spring being secured to the shaft in a proper manner. A rod, *c*', connects the catch-bar D' with the front of the comb-plate. These devices form an elastic brace or support between the lower part of the machine and the draft-frame, and thus serve to relieve the severity of thrusts and jars when obstacles are encountered in the progress of the machine.

Having thus explained the nature and purposes of our invention, we claim, and desire to secure by Letters Patent of the United States, the following:

Claims.

1. The combination of the comb-plate, the rotary cutter-head, and the standard supported upon the axle of the machine, the comb-plate and cutter-head being adjustably mounted upon the standard, substantially as described.

2. In combination with the comb-plate and cutter-head mounted upon the supporting-standard, we claim the lifting-lever and its connections, substantially as described.

3. In combination with the supporting-standard, we claim the tubular shaft which supports the rotary cutter-head and the pinion-sleeve, constructed to form a clutch, by which the cutter-head is thrown into operation when depressed and released therefrom when elevated, substantially in the manner described.

4. The combination of the standard H, tubular shaft N, pinion-sleeve J, gear I, and axle A with its wheels, all substantially as and for the purpose described.

5. The combination of the standard H, sliding yoke U, and catch *n* for locking the cutter-head and comb-plate in an elevated position, substantially as described.

6. The combination of the comb-plate and cross-bars F F with the posts D D and boxes C C on the axle to give horizontal steadiness as well as vertical adjustment to the said comb-plate, substantially as described.

7. In combination with the cutter-head and comb-plate, we claim the rear guard *l*, arranged substantially as and for the purpose described.

8. The combination, with the draft-frame and comb-plate, of the catch-bar D', slide E', spring G', and connecting-rod *c'*, for the purpose of relieving the severity of thrusts and jars, substantially as described.

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