(No Model.) 2 Sheets—Sheet 1.

R. W. OLIVER.

HEDGE TRIMMING MACHINE.

No. 381,508. Patented Apr. 17, 1888.

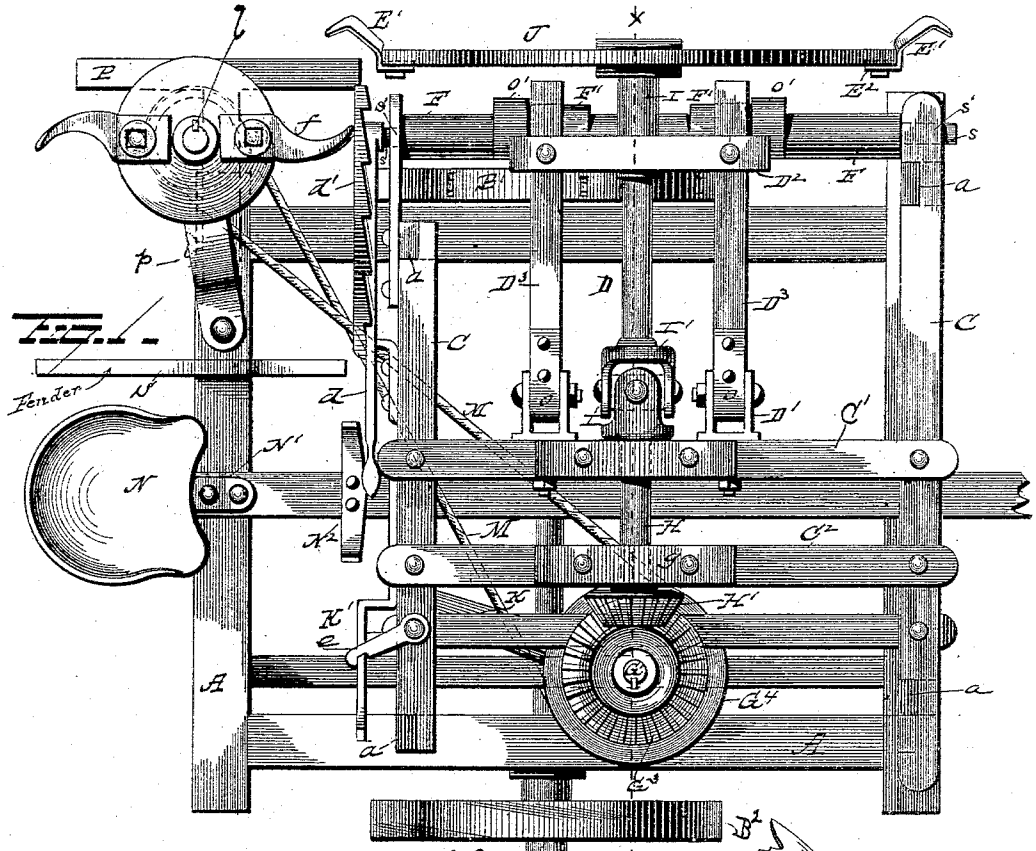


Fig. 1.

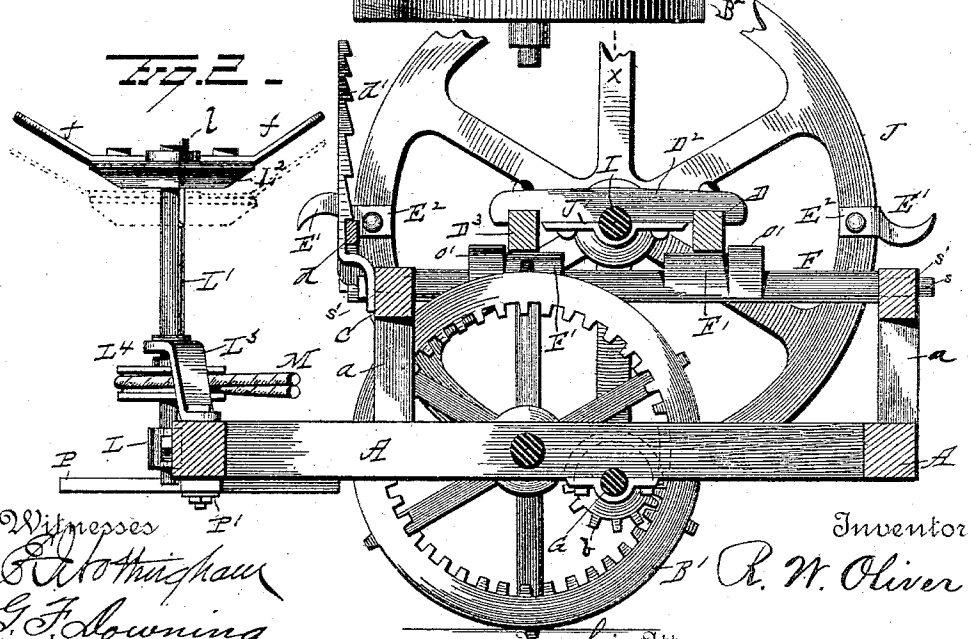


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

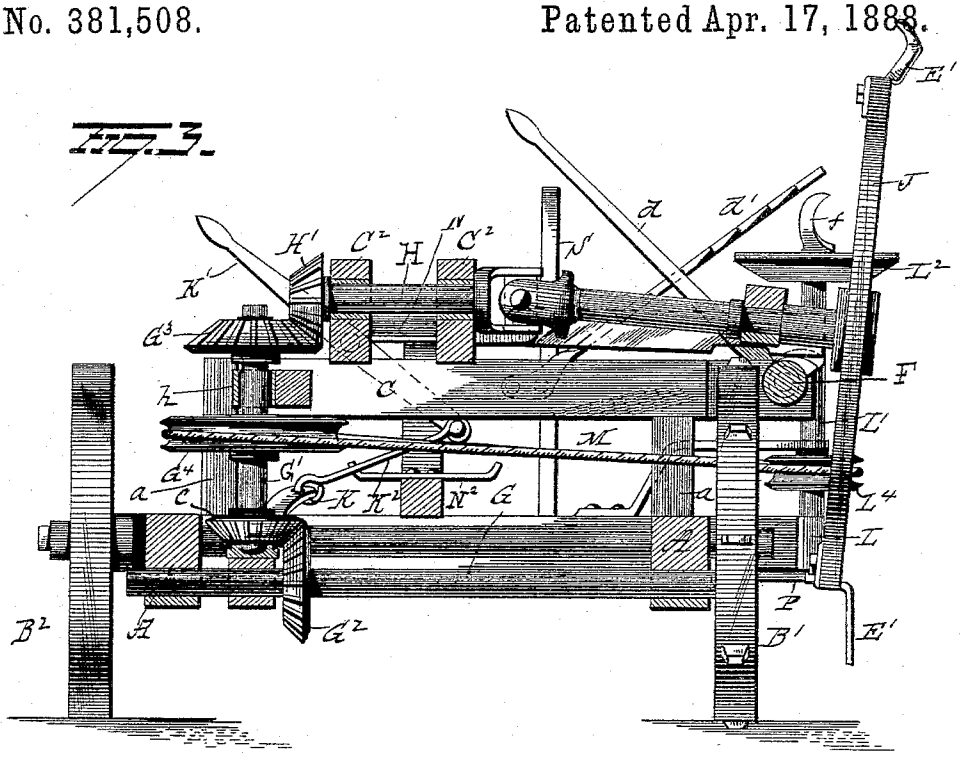
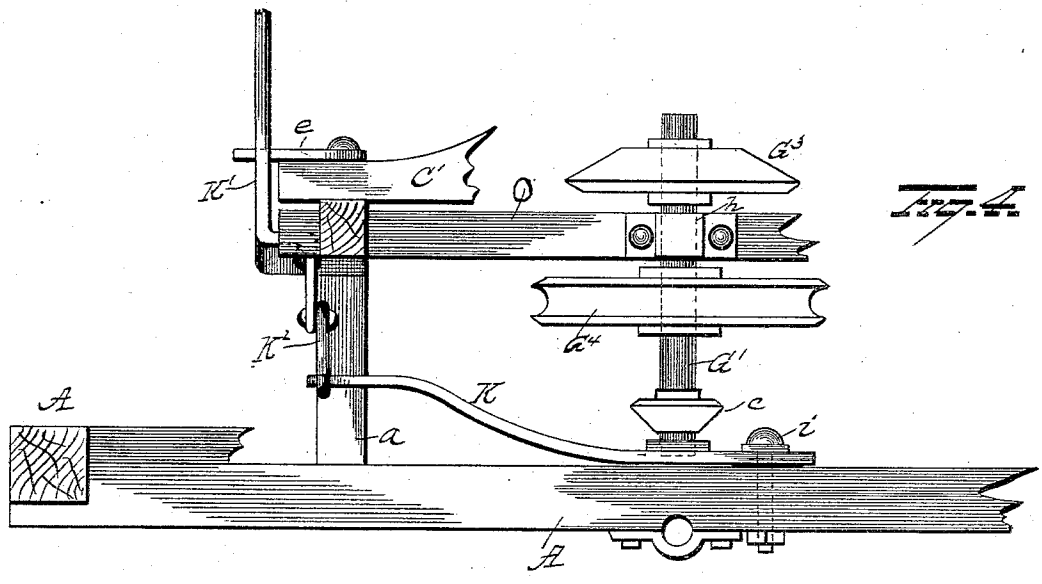


Fig. 4.



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UNITED STATES PATENT OFFICE.

REUBEN W. OLIVER, OF LOCKPORT, NEW YORK.

HEDGE-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,508, dated April 17, 1888.

Application filed April 11, 1887. Serial No. 234,429. (No model.)

To all whom it may concern:

Be it known that I, REUBEN W. OLIVER, of Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Hedge-Trimming Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in hedge-trimming machines, the object being to provide a device for this purpose that will permit an adjustment of the cutter-head to any desired angle for clipping the sides of a hedge by simple and reliable mechanism.

A further object is to construct an independent top-trimmer having a vertically-adjustable cutter-head, and one adapted to change the form of the hedge-top by cutters bent at different angles.

A further object is to afford a means of changing the inclination of the side cutting-head of the hedge-trimmer while the machine is in operation.

A further object is to afford a means of arresting the motion of the cutter-heads instantly without stopping the progressive movement of the machine.

A further object is to provide a gage to facilitate the proper trimming of a hedge.

A further object is to furnish a guard to prevent accidental contact of the operator with a revolving cutter-head.

With these objects in view my invention consists in certain features of construction and combinations of parts, that will be hereinafter described, and pointed out in the claims.

Referring to the drawings making a part of this specification, Figure 1 is a top plan view of the device. Fig. 2 is a sectional elevation. Fig. 3 is a vertical cross-section on line *x x* of Fig. 1. Fig. 4 is a detached view of the operating-gear of the machine.

A represents the main frame of the machine, preferably made of wood and rectangular in form. At four points near the corners of this frame the upright standards *a* are secured, which give stable support to the top frame, C, the latter having two cross-bars, C′ C², attached to the upper surface to give support by box-bearings *g g* to the drive-shaft H.

The drive-shaft H has a bevel-pinion, H′, affixed on one end, which meshes with a bevel-wheel, G³, rigidly secured to the upper end of the bevel-gear shaft G′, which is supported upright by the box *h*, attached to the transverse bar O on the top frame, C. The lower end of the bevel-gear shaft G′ is supported in a box secured to the step-lever K, and rests thereon to be moved laterally when this lever is moved sidewise upon its pivot end *i*, and in this manner throw the cutter-heads into or out of motion, as will be explained.

Immediately above the lower end of the bevel-gear shaft G′ a bevel-pinion, *c*, is fastened rigidly upon said shaft G′, this pinion meshing with a bevel-wheel, G², on the main-gear shaft G, which is supported to rotate in boxes affixed to the under side of the main frame A. The main-gear shaft G is further provided with a pinion, *b*, that meshes with the gear-teeth formed on the inner face of the rim of the driving-wheel B′. This wheel and wheel B² are loosely mounted and secured upon the axle B to afford a rolling support to the machine.

Upon the top frame, C, the cutter-frame D is attached by hinges D′ to have a limited vertical movement, the center of motion of the hinged joints *o o* being in a horizontal plane with the center of the drive-shaft H.

The hinged frame D consists of the parallel bars D³, attached at one end to hinges D′, as stated, and a cross-bar, D², rigidly secured to the parallel bars, said cross-bar affording a support for the shaft I, which carries the cutter-head J upon its outer end by means of a box-bearing, J′, that permits a rapid rotation of the shaft. The shaft I is connected to the drive-shaft H by a universal joint, I′, which permits a vertical vibration of the hinged frame D, as well as of the shaft I. The centers of the hinge-joints *o* and of the horizontal pivots of the universal joints lying in the same plane, it is evident that the shaft I may be made to swing with the vertical movement of the frame D, and the cutter-head J be given a corresponding movement to incline it from a perpendicular position when desired.

The cutter-head J, attached to the outer end of shaft I, is of proper diameter to suit the height of the hedge and of suitable weight to give the required momentum to insure effective action of the cutters E′, which are preferably sickle-shaped, these cutters being secured in recesses formed in the peripheral edge of the cutter-head to insure stability. The extensions E^2 of the cutters, that lie on the face of the cutter-head E, afford a means of connecting these cutters E′ to the head by bolts inserted through the portions E^2 and rim of the head.

Immediately below the hinged frame D the cam-shaft F is supported by its journaled ends *s* in boxes *s′*, secured to or formed in the top frame, C. The cam-shaped projections F′, adapted to upbear the free end of the hinged frame D, project from the shaft F at proper points on its surface to afford such a support, and it will be noticed that there are shouldered projections *o′ o′* made on the cams, that act as checks to prevent a lateral movement of the hinged frame D, and consequent injurious strain of the hinged joints, by reason of their abutment on the opposed faces of the hinged frame. The movement of the hand-lever *d*, attached to the rear end of the shaft F, will rock the latter, and its cams F, by impinging against the parallel bars D^3, raise or lower the frame, and the cutter-head J will be inclined more or less from a perpendicular position.

The hand-lever *d*, affixed to one end of the shaft F, is held at any desired point by the ratchet-bar *d′*, which latter is affixed to the top frame, C, at a convenient point, the ratchet-bar and lever *d* having a position in front of the driver to permit ready access to the lever when a change of adjustment is desired to cut a different slant on the side of the hedge.

On one corner of the main frame A, which is extended rearwardly a suitable distance, the step-box L is attached to give revoluble support to the upright shaft L′, upon which the horizontal cutter-head L^2 of the hedge-top trimmer is adjustably secured by means of a key, *l*, or any proper means, inserted between the shaft L′ and the head L^2 at any desired height on the shaft. This head L^2 is preferably made of metal of a thickness and diameter to give it necessary weight. The cutters *f* of the cutter-head L^2 are seated in grooves or recesses cut in the top face of head at proper points, two or more cutters being employed, which are bolted to the head. The portions of these knives that extend to have cutting contact with the top of the hedge are preferably made sickle-shaped, and these cutters are bent to give any desired form, as it is apparent that any set or bend given to the projecting cutter from a horizontal plane will give a corresponding form to the hedge-top, different sets of cutters being employed to change to any preferred style of hedge-top.

A supporting-bracket, L^3, is bolted to the top of the main frame A at a suitable point to afford a lateral support to the upright shaft L′, which has a bearing thereon.

Immediately below the bracket L^3 the pulley L^4 is attached to the upright shaft L′, upon which it is placed to give the latter motion.

A cord, M, is made to engage the pulleys G^4 and L^4, and thus transmit motion and power derived from the driving-wheel B′ to the cutter-head L^2, the sprocket-wheel G^4 being fixed upon bevel-gear shaft G′, and it will be seen that the bracket L^3 will act as a guard to prevent the occupant of the seat N from coming in contact with this cord.

In order to prevent accident to the driver when the machine is in operation, a guard, S, is erected between the seat and the upright shaft of the horizontal cutter-head to avoid injurious contact with its cutters.

The seat N is located upon the spring-support N′, which is secured to the main frame at or near the center of the same, a foot-rest, N^2, being provided, which is affixed to the same timber upon which the seat-support is attached.

The lever K is pivoted at *i* to the frame A, and a little rearward of this point the lower end of shaft G′ is stepped in the lever. The free or rear end of lever K is loosely connected by link K^2 to the pivoted lever K′, so that when the latter is shifted laterally the lower end of the shaft G′, from the loose engagement of this shaft near its upper end between the bar O and box *h*, is also laterally shifted, throwing its beveled gear-wheel *c* either into or out of engagement (as the case may be) with the wheel G^2. Thus when the lever K′ is held by the latch *e* in the adjustment shown in Figs. 1, 3, and 4, the bevel gear-wheels *c* and G^2 mesh with each other and the machine is said to be "in gear." With the opposite movement of lever K′ the wheel *c* is removed from contact with the wheel G^2, and the machine is thrown out of gear.

When the lever K′ is released from the latch-hook *e* and is given a reversed position, the bevel-gear shaft G′ is moved at its foot and the gear-wheels and pinions that were in meshing adjustment are separated, a stoppage of rotative movement of the cutter-heads resulting therefrom.

In order to afford a ready means of aligning the position of the advancing hedge-trimmer with the finished portion of the hedge, a gage-bar, P, is supported in a sliding position on the lower surface of the timber of the frame A, upon which the upright shaft L′ is sustained. This gage-bar P is T-shaped, and has its projecting portion P′ made to lie in contact with the side surface of the main frame A. This piece P, forming the gage-board, extends longitudinally of the machine, and is preferably located a little below the cutter-head L^2, and in operation is made to line with the face of the cutter-head E, and the thumb-screw *p* is turned to hold it in the desired position previous to starting the hedge-trimmer to work. The

gage-board will by this adjustment of its outer edge have a slight contact with the trimmed portion of the hedge, and acts as an indicator to the driver, who can by observing the position of the gage-board determine the proper line of progression of the machine to give the best results in regard to the uniformity of surface of the trimmed hedge-wall.

Many slight changes might be made in the constructive features of this device without departure from the spirit of my invention. I do not, therefore, desire to limit myself to exact forms shown; but,

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

1. In a hedge-trimming machine, the combination, with a suitable frame, a jointed shaft journaled therein, and a cutter-head affixed to the shaft, of a rocking cam-shaft located transversely beneath the jointed shaft, and means for rocking said shaft, substantially as set forth.

2. In a hedge-trimming machine, the combination, with a jointed shaft and a cutter-head secured thereon, of a rocking shaft transversely located beneath the jointed shaft, said rocking shaft having cams thereon, and means for rocking and locking the shaft in the desired position, substantially as set forth.

3. The combination, with a rotary jointed shaft and a cutter-head rigidly secured thereon, said head having a set of detachable cutters, of a hinged frame adapted to support the jointed shaft, and a cam-shaft transversely located beneath one end of the hinged frame for elevating or depressing the latter by its rotation, substantially as set forth.

4. In a hedge-trimming machine, the combination, with a rotary cutter-head having detachable cutters, a jointed shaft, a cam-shaft, and cams, of a hinged frame, hinges in line with the joint of the drive-shaft, a coupler that affords universal movement to the connected sections of the jointed shaft, a lever fixed to the cam-shaft, and a ratchet-bar to secure the cams in elevated or depressed position, substantially as set forth.

5. The combination, with a rotary jointed shaft, a cutter-head secured thereto and having cutters attached, and a cam-shaft located transversely beneath one end of the jointed shaft and having cams thereon, of a drive-shaft, a drive-wheel, and gearing to connect the drive-shaft to the drive-wheel, substantially as set forth.

6. In a hedge-trimming machine, the combination, with a rotary cutter-head secured on a jointed shaft, a hinged frame adapted to support the shaft, a cam-shaft and cams, a drive-shaft, and gearing to communicate motion from the driving-wheel to the cutter-head, of a bevel-gear shaft, a lever pivoted to the frame and affording a support in which the lower end of the bevel-gear shaft is stepped, and a hand-lever loosely connected to the pivoted lever, whereby the latter is laterally shifted, substantially as set forth.

7. In a hedge-trimming machine, the combination, with a rotary cutter-head adapted to trim the sloped sides of a hedge, of a gage-board located to the rear of the main cutter-head and adapted to align with the latter in its various adjustments, and a device for securing said gage-board in the desired position, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

REUBEN W. OLIVER.

Witnesses:
VOLNEY SIMSON,
JOHN T. GAILER.