

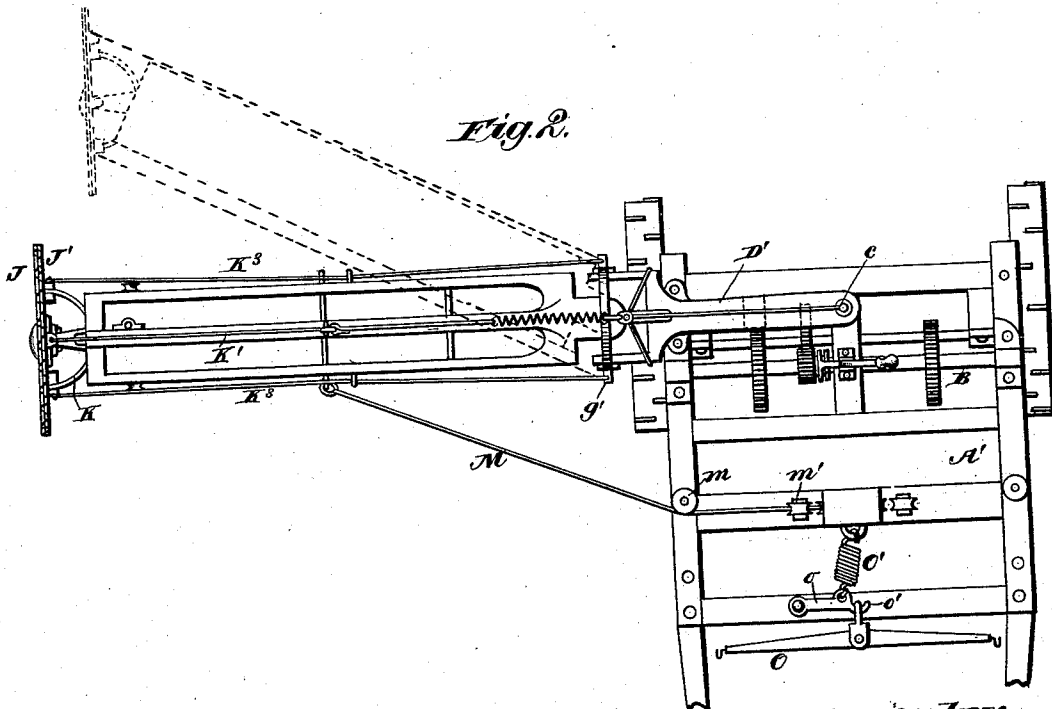
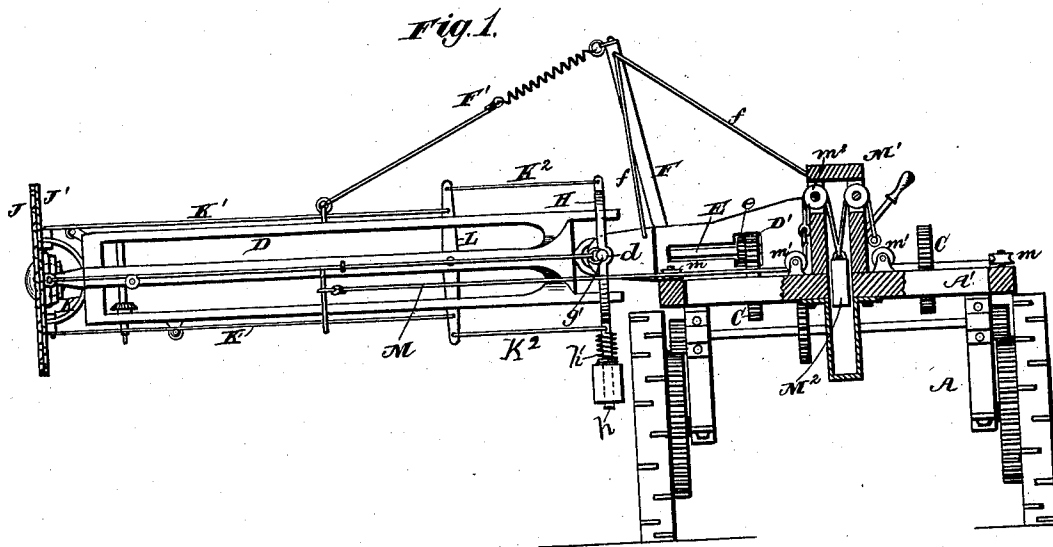
(No Model.)

3 Sheets—Sheet 1.

E. W. DAWSON.
HEDGE TRIMMING MACHINE.

No. 290,865.

Patented Dec. 25, 1883.



Witnesses.

Robert Everett

George W. Rea

Inventor.

Ezekiel W. Dawson.

By James L. Norris.

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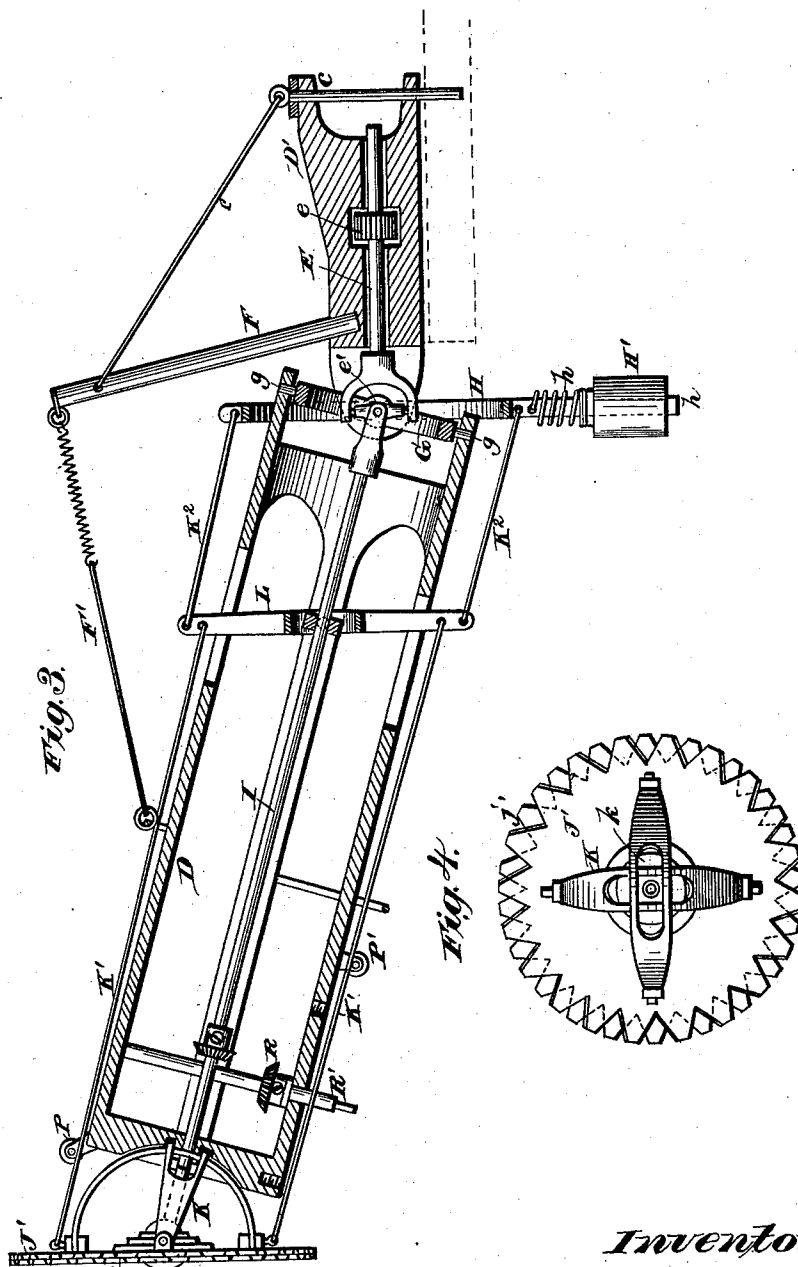
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Fig 5.

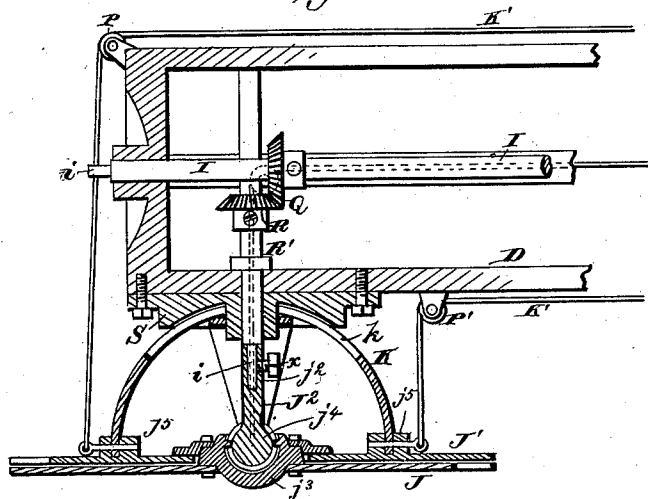
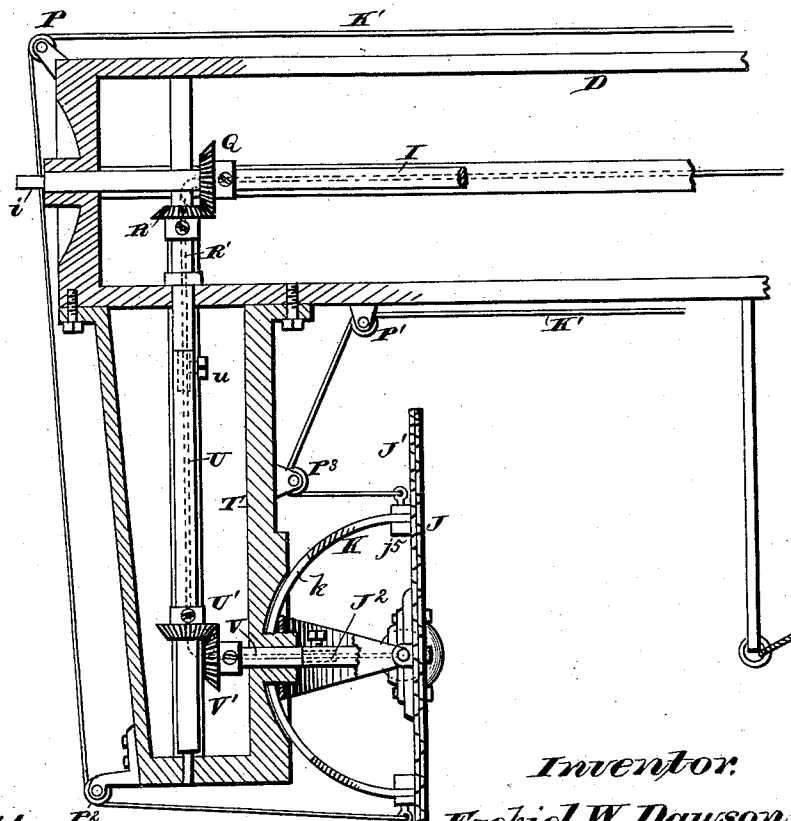


Fig 6.



Witnesses.
Robert Everett,
George W. Rea

Inventor.
Ezekiel W. Dawson.
By *James L. Norris,*
Atty

UNITED STATES PATENT OFFICE.

EZEKIEL W. DAWSON, OF SMYRNA, DELAWARE.

HEDGE-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 290,865, dated December 25, 1883.

Application filed March 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, EZEKIEL W. DAWSON, a citizen of the United States, residing at Smyrna, Kent county, Delaware, have invented new and useful Improvements in Hedge-Trimming Machines, of which the following is a specification.

My invention relates to machines for trimming hedges and the like; and the novelty consists in providing a machine which passes along one side of a hedge, with a rotary cutter which will maintain a vertical or horizontal position, according to the surface being operated upon, without being governed by the relative position of the carriage, which will enable an operator to adjust the cutter in its relation to the hedge; in the employment of readily-interchangeable devices which will operate on either side of the hedge or on the top, and in providing means by which the cutter can be actuated from either side of the carriage, whereby it will operate on a given hedge as the carriage travels in either direction; and to these ends the invention consists, essentially, in the mechanisms and combinations of mechanisms hereinafter described, particularly pointed out in the claims, and fully illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical sectional view of the carriage, taken transversely to its line of travel, with the cutter-frame and cutter in elevation; Fig. 2, a plan view of the machine, showing the cutter-frame deflected to the rear in dotted lines. Fig. 3 is an enlarged vertical longitudinal section of the horizontal cutter-frame and its connections. Fig. 4 is an inner face view of the cutter and its bearings. Fig. 5 is a vertical longitudinal section of part of the cutter-frame, showing the cutter upon the lower side of the frame to cut the upper surface of the hedge; and Fig. 6, a similar view, showing the cutter arranged vertically on an auxiliary frame to cut the side of the hedge opposite to that on which the carriage travels.

The invention is designed to trim the hedge from one side, so that the farmer need only occupy his own land in trimming the hedge, and to avoid ditches, impassable roads—such as railroads—&c.

The machine as shown in Figs. 1 and 2 is adapted to trim the side of the hedge next the carriage. As shown in Fig. 5, it is adapted to trim the upper surface of the hedge, and in Fig. 6 it is adapted to trim the side of the hedge opposite the side on which the carriage travels.

In the drawings, in which similar letters of reference indicate like parts in all the figures, A designates a carriage of ordinary and approved construction, having gear-connections between the traction-wheels, and a shaft, B, said shaft being journaled in the frame A' of the carriage, and carrying gear-wheels C C, arranged one on each side of and equidistant from the center *c* of the carriage, at which point *c* is pivoted the frame D', to which, by a universal joint, *d*, is hinged the cutter-frame D. By means of the pivot *c*, the cutter-frame D and frame D' may be turned to either side of the carriage, so that the cutter may operate upon the hedge as the carriage travels in either direction.

Within the frame D' is journaled a shaft, E, carrying a pinion, *e*, which is located so as to mesh with one or the other gear-wheel C, according to which side the frame is turned. To the said frame D' is secured a standard, F, properly guyed to the frame by ropes or wires *f*, and carrying a spring-tie, F', which extends from the top of said standard to a point at or near the center of the cutter-frame D. A ring, G, has vertical journals *g*, which have bearings in the cutter-frame D, and horizontal journals *g'*, which have bearings in the frame D', thus forming a gimbal-joint, by means of which the cutter-frame D has universal play independent of the frame D'.

Upon the horizontal journals *g'*, which project through the sides of the frame D', is hung a ring, H, having a downwardly-projecting arm, *h*, which carries a weight, H', secured to said arm by a spring, *h'*, as shown.

To the shaft E, by a universal joint, *e'*, is connected the cutter-actuating shaft I, the free end of which is secured to the removable cutter-shaft J', to which is hung the revolving cutter J, which bears against a stationary disk, J', having cutter-teeth *j'*. The cutter-shaft J' is, for a portion of its length, formed into a

sleeve, J^2 , which is adapted to receive the reduced end i of the actuating-shaft, to which it is keyed or secured by a set-screw. (See Fig. 5.) A hub, j^3 , on the cutter-disk J projects through the stationary disk J' , and is provided with a socket, which receives a ball, j^4 , on the shaft J^2 . The disk J' has perforated ears j^5 , to which are loosely secured semicircular arms K , having slots k , which receive the shaft J^2 . From the upper and lower pivots of these arms K wires K' extend inward, and are secured to a vertical arm, L , pivoted in the side bars of the frame D , and which has a central opening, through which the shaft passes, and in which it operates loosely, and to the ends of this arm, both above and below, wires K^2 connect with the tilting-ring H . From the pivots of the horizontal arm K side wires, K^3 , extend inward, and are secured to the ends of the pivot g' of the ring G upon each side of the frame D . From any desired point near the center of the frame D a rope, wire, or chain, M , passes inward and over pulleys m m' , secured upon the main frame of the carriage; thence over a pulley, m^2 , journaled in a box, M' , and through the eye of a weight, M^2 , suspended in said box M' . This arrangement of pulleys m m' m^2 is duplicated, so as to serve as the frame D D' is turned to either side of the carriage, and the connections may be readily made.

In practice an attendant walks behind the frame D and manipulates it up or down to strike the surfaces which need clipping, and forward when the carriage is too far from the hedge, and backward when the carriage is too close. In other words, the operator may adjust the cutter to the hedge at will by deflecting the frame D .

It will be observed that, whatever the deflection of the frame D , the cutter will at all times stand in its vertical position parallel with the line of travel of the carriage, and that the tilting or tipping of the carriage, owing to unevenness in the ground traversed thereby, will not affect the position of the cutter.

It sometimes occurs that large branches of the hedge or other causes effect a stoppage of the cutter, and disaster to some of the gear would result unless the operating devices were automatically stopped. I provide for such emergency by securing the whiffletree O to a pivoted arm, o , having a hook, o' , which engages the eye of said whiffletree, a spiral or other spring, o' , connecting the arm o to the frame A' . When such obstruction occurs, the draft will act to overcome the constant force of the spring, and will be disconnected automatically.

I will now describe the construction and arrangement when the machine is formed to cut the top of the hedge.

Referring to Fig. 5, Q designates a beveled pinion rigid upon the shaft I , and P and P' guide-pulleys for the cords K' , arranged on the frame D , but serving no function when the machine is employed as shown in Figs. 1, 2,

and 3. A hub-plate, S , is adapted to be secured upon the under side of the frame D . A shaft, R' , is journaled vertically in the said frame, and carries a beveled pinion, R , which is adapted to mesh with the pinion Q .

To adapt the machine to trim the top of the hedge, it is only necessary to loosen the set-screw x and cords K' K^2 K^3 , take off the shaft J^2 and cutter devices, adjust the same properly, as shown in Fig. 5, engage the set-screws x , and readjust the cords K' K^2 K^3 —the cords K' over the pulleys P and P' —when the machine is ready for service, with the face of the cutter acting horizontally and susceptible of manipulation, as before described.

Referring to Fig. 6, T designates an interchangeable frame, adapted to be secured to the under side of frame D by the same means as the plate S , and having guide-pulleys P^2 and P^3 for the cords K' , and a shaft, U , with beveled pinion U' journaled in said frame, the shaft being connected to the shaft R' by a coupling, u , and the pinion U' meshing with a similar pinion, V' , upon the shaft V , journaled in the frame T at right angles to the shaft U . Each of the shafts R' and V has a reduced end, similar to the part i on the shaft I , to receive the sleeve of the shaft U or shaft J^2 , and secured thereto by the set-screw x . In this latter arrangement, it will be observed, the cutters are again secured in vertical position, but with the face in an opposite direction, or toward the carriage, and in this position the outside of the hedge may be readily trimmed. In any of the positions shown the frame D and cutters are supported by the springs and ropes and weights, and the side cords act to keep the cutter in the desired position without regard to the deflection of the frame D or the amount to which the carriage is tilted.

I attach importance to the means for holding the cutter parallel to the line of travel.

Modifications in details of construction may be made without departing from the principle or sacrificing the advantages of my invention, the essential features of which will be readily understood from the foregoing description, taken in connection with the drawings.

Having thus described my invention, what I claim is—

1. In a machine for cutting hedges, and in combination with the carriage, a pivoted frame having cutter-operating shaft connected with the drive-wheel of said carriage, and a hinged cutter-frame carrying a revolving cutter, the said cutter and frames being adapted to serve on either side of the carriage, substantially as described.

2. The combination, with the drive-wheel, the shaft B , having gear-wheels C C , and intermediate gearing, of the pivoted frame having cutter-operating shaft provided with pinion e , said pinion e being adapted to engage with one or the other of the gear-wheels C C as the cutter is arranged upon either side of the carriage, substantially as described.

3. The pivoted frame D', carrying the shaft E, and hinged frame D, having shaft I, said shafts connected together by a universal joint, the cord M, box M', weight M², and pulleys m m' m², all combined and arranged to serve substantially as described.
4. In combination with the frame A', pivoted frame D', and cutter-frame D, said pivoted and cutter frames connected by a universal joint, the rope M and weight M², the standard F, guy-ropes f, and spring-tie F', substantially as described.
5. The rotary cutter having ball-and-socket joint and cutter-guard, as shown, and semi-circular arms having slots k, combined with means for holding said cutter parallel with the line of travel of the carriage, substantially as described.
6. The rotary cutter and cutter-guard, as shown, the slotted arms K k, and frames D and D', combined with the ring H, having arm h, the cords K' K² K³, and arm L, substantially as described.
7. The combination of the shafts E and I, connected together by a universal joint, with the shaft J², carrying ball j⁴, the cutter J, provided with socket J³, fixed cutter J', slotted arms K k, and set-screw x, substantially as described.
8. The combination, with the shaft I, having bevel-pinion Q, of the shaft R', having bevel-pinion R, the plate S, shaft J², and cutter, substantially as described.
9. In combination with the frame T, shafts R' and I, the shafts U and V, the shaft J² and cutter, the ropes and connecting-gear, substantially as described.
10. In combination with the frame D and shaft I, the interchangeable parts S and T, and the cutter and connecting-gear, substantially as described.
- In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.
- EZEKIEL W. DAWSON.
- Witnesses:
JAMES L. NORRIS,
J. A. RUTHERFORD.