3 Sheets—Sheet 1.

J. C. TENNENT.

Cork-Cutting Machine.

No. 207,830. Patented Sept. 10, 1878.

Fig. 1.

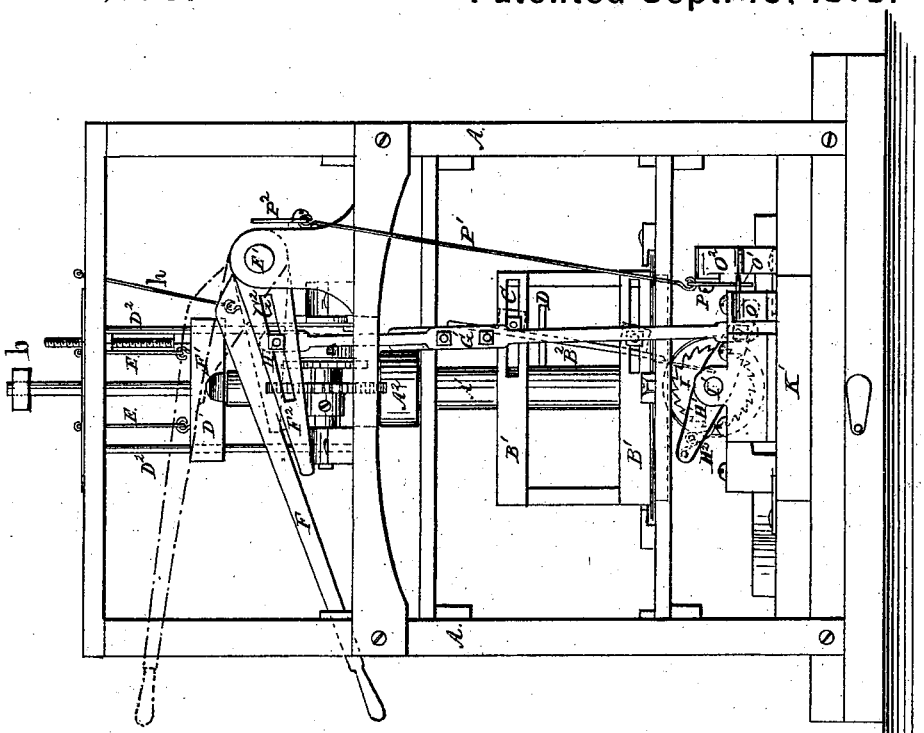

Fig. 2.

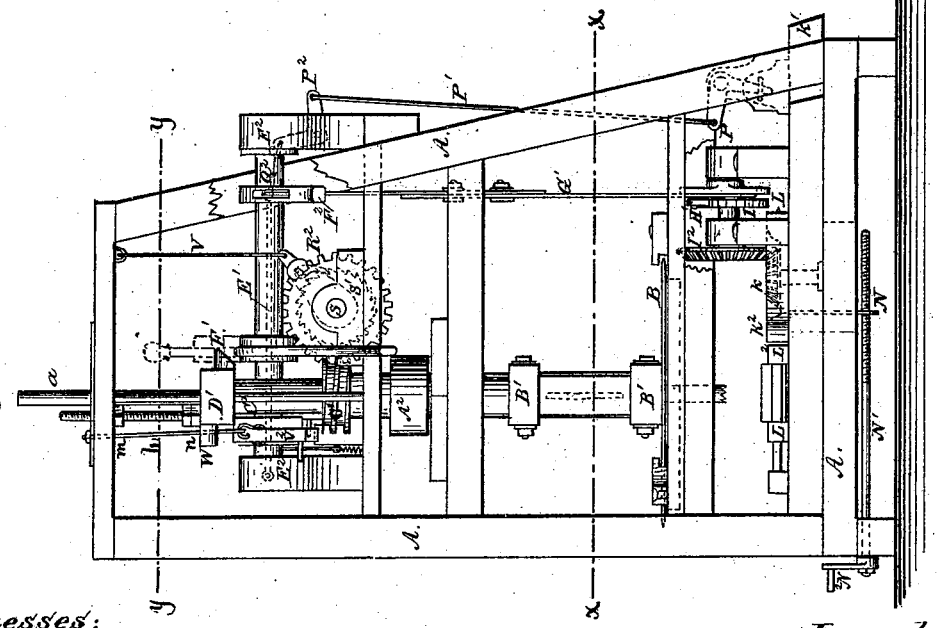

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Fig. 3.

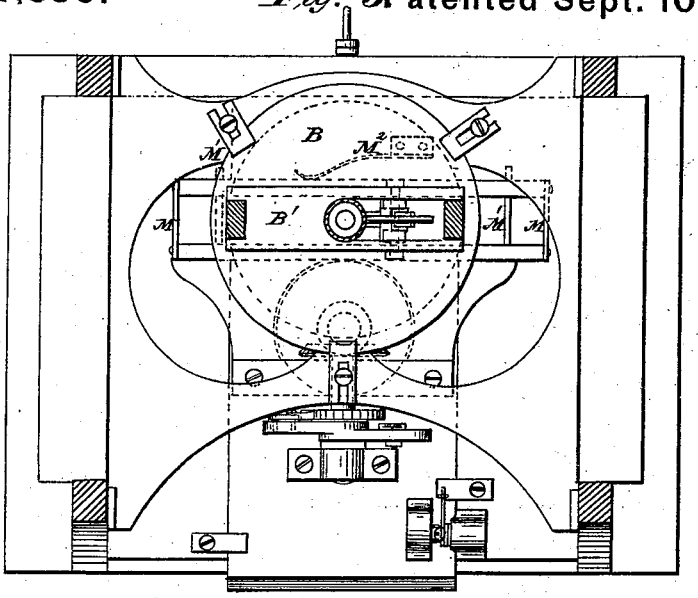


Fig. 4.

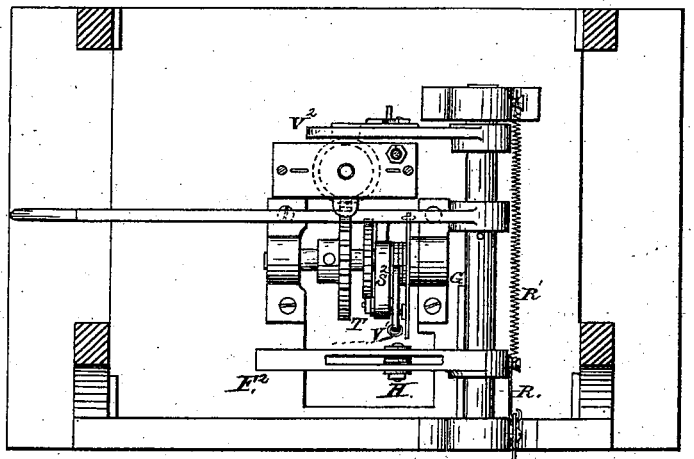


Fig. 5.

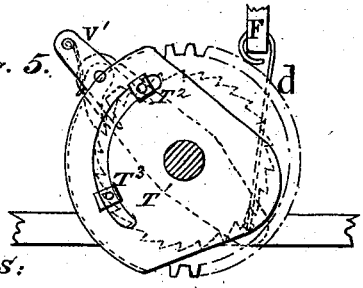
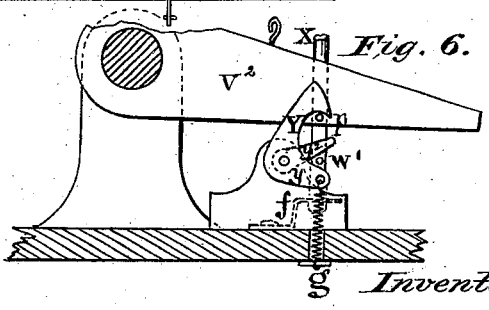


Fig. 6.



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3 Sheets—Sheet 3.

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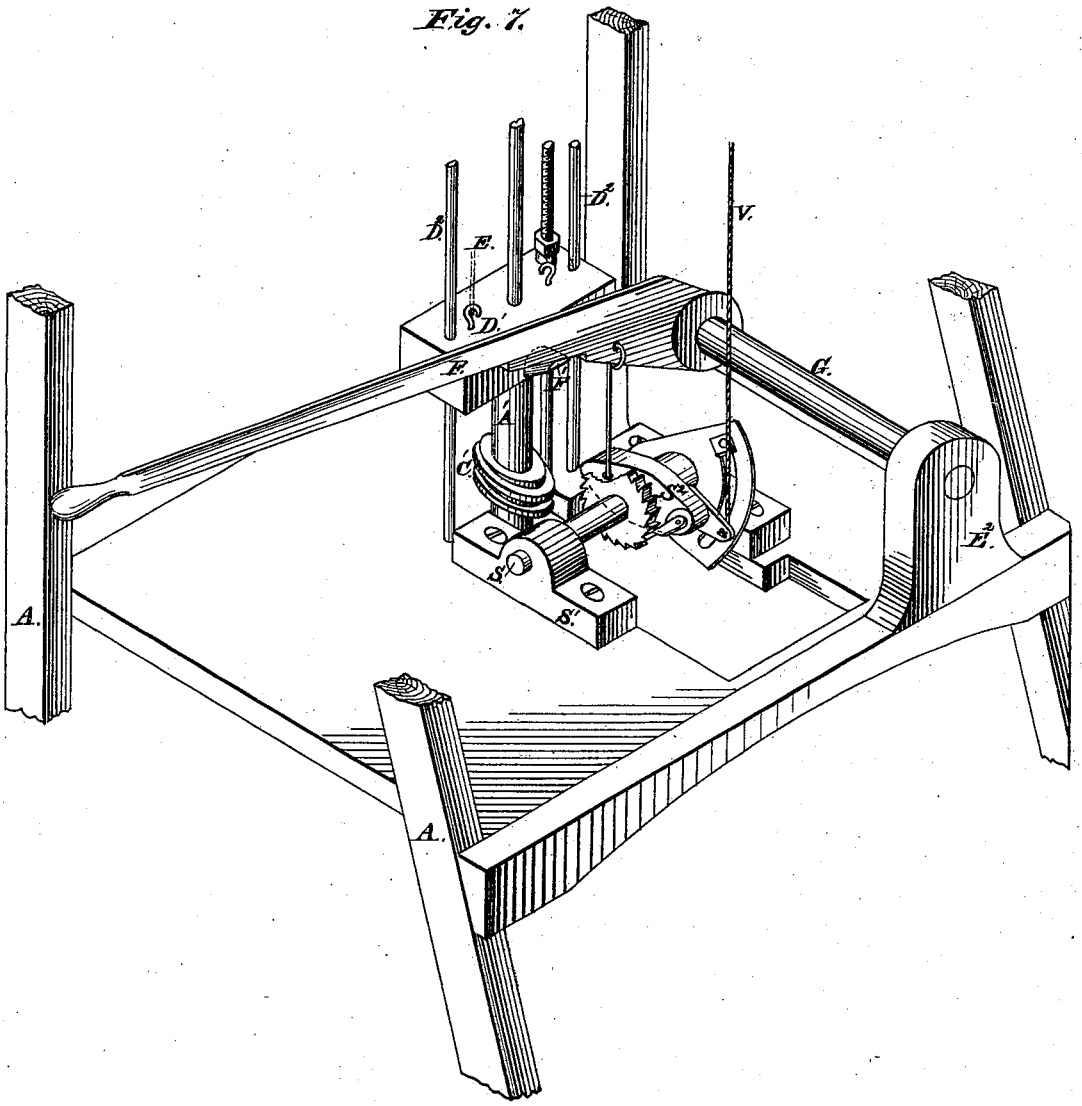
Cork-Cutting Machine.

No. 207,830. Patented Sept. 10, 1878.

Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN C. TENNENT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CORK-CUTTING MACHINES.

Specification forming part of Letters Patent No. **207,830**, dated September 10, 1878; application filed January 30, 1878.

To all whom it may concern:

Be it known that I, JOHN COURTOIS TENNENT, of Aquasco, Prince George's county, Maryland, but now a resident of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Cork Cutting and Tapering Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

Figure 1 is a side elevation of my machine. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view on the line *x x*, Fig. 2. Fig. 4 is a plan view on the line *y y*, Fig. 2. Figs. 5 and 6 are detail views. Fig. 7 is an isometrical detail view of the upper part of the machine.

The object of this invention is to cut and taper the cork by one operation, and at the same time acting automatically in the presentation of the knife into and through the cork, and in the feeding mechanism, whereby the slab of cork wood is moved intermittently forward during the interval of cutting; and it consists of a single tapering knife mounted in a revolving frame on adjustable bearings, and in certain details, hereinafter more fully set forth, and pointed out in the claims.

A represents any suitable frame-work, in which is mounted the cylindrical shaft A^1, said shaft being provided with a driving-pulley, A^2, or other suitable means, for imparting motion to the shaft.

Secured to the lower end of the cylindrical shaft A^1 is a disk, B, and frame-work B^1, in which the knife-bar B^2 is adjustably secured. One end of the frame B^1 and the disk B is slotted vertically to admit of the setting of the knife-bar toward or from the axial cylindrical shaft which supports it, thus giving to the knife-bar a greater or less radius, and permitting it to be set to cut large or small size corks. Horizontal slots C are also provided, in which the trunnions of the knife-bar supports rest. The trunnions or supports may be provided with thumb-screws or any of the well-known devices for holding them firmly in place.

It will be seen that by this adjustment of the knife the cork can be cut straight or tapered to any angle, and the size of the cork increased or diminished, as the case may be.

The cylindrical shaft A^1 is provided at its upper end with a worm-wheel, C^1, which imparts motion to the feeding devices, and gives to the knife its automatic motion to and from the material to be acted upon, of which a full description will be given hereinafter.

Inside of the cylindrical shaft A^1 is placed a smaller cylindrical shaft, C^2. This shaft has projecting from its lower end, and at a right angle therefrom, a stud or arm, D, which passes through a longitudinal slot in the shaft A^1 and through the knife-bar B^2.

The shaft C^2 is provided at its upper end with a cross-head, D^1, which travels in a vertical plane on guide-rods D^2 D^2, and is held up by springs E E; or, instead of this arrangement of attaching the cross-head to the upper end of the shaft C^2, the equivalent one may be used of continuing the outer shaft, A^1, upward through the upper bearings, and having the cross-head D^1 to encircle it and resting between pins above and below, which, passing through longitudinal slots in the shaft A^1, are secured to the inner shaft, C^2, thus serving equally to raise or depress it while in motion.

At the upper and side portion of the machine is a shaft, E^1, mounted in suitable bearings E^2 E^2, and to which is secured a hand-lever, F. This lever engages with a stud or projection, F^1, on the cross-head D^1, and, when depressed by hand or otherwise, carries the cross-head, shaft C^2, and knife-bar B^2 down with it, bringing the knife in contact with the material to be cut. When the hand-lever is released, the parts above mentioned are returned to their elevated position by the action of the springs E E, and the knife is removed from the material on which it has been acting. An arm, F^2, is adjustably secured to the shaft E^1 by a feather, G, Fig. 4, which works in a grooved seat in the arm F^2, and by this means the arm is capable of adjustment in the direction of the length of the shaft.

To the arm F^2 is secured a connecting-rod, G^1. This rod is adjustably secured thereto by means of vertical and horizontal slots G^2 and headed screw-bolt H. The lower end of the connecting-rod G^1 is secured to one end of the pivoted arm H^1. The other end of the arm H^1 is provided with a spring-pawl, H^2. Said pawl engages with a ratchet-wheel, I, secured to

shaft I^1. To the inner end of the shaft I^1 is secured a bevel-gear wheel, I^2, which meshes into and gears with the bevel-wheel k, which is vertically seated in the adjustable platform or base k^1. The bevel-wheel k is also secured to a disk, k^2, which is provided with spurs L on its periphery. These spurs engage with the sides of the adjustable frame L^2, in which the cork or other material to be cut is held.

I do not confine myself to the use of the bevel-gear wheel k and disk k^2, with its spurs L, for it is evident that the shaft I^1 may be prolonged, and a plain wheel, with spikes or prongs on its face for moving the cork-frame L^2 may be used in lieu of the gearing shown; or the shaft I^1 may be set lower down in the frame of the machine and lengthened so as to extend under the frame L^2, and provided with a plain toothed wheel to mesh into a rack-bar on the frame L^2, without departing from the spirit of my invention.

The adjustable frame L^2 consists of two pieces of timber, which are connected together by springs M M and rods M^1 M^1. One end of each rod is rigidly connected to one of the side pieces, the other ends being free to work in holes formed in the other side piece. By this device I have an adjustable frame that can adapt itself to any sized piece of cork or other material. This frame is held against the spur-disk by the strap-spring M^2 or other suitable device.

The platform or base is moved toward or from the cutting-point by means of the bracket N, screw-rod N^1, and crank N^2. To the outer end of the platform k^1 is secured a bracket, O, in which a staple, O^1, is secured. A bracket, O^2, is secured to the permanent flooring or frame-work of the machine, and has secured to it a bell-crank lever, P. One prong or end of this bell-crank lever engages with the staple O^1; and to the other end or prong of the bell crank lever is secured a rod or cord, P^1, which passes up and is secured to an arm of the bell-crank lever P^2, which is pivoted to one of the brackets which support the shaft E^1. To the outer end of the bell-crank lever P^2 is secured a rod or cord, R, said cord or rod being in turn secured to the rear end of the adjustable lever or arm F^2.

It will thus be seen that by turning the crank N^2 the platform k^1 is moved in the desired direction, and through the rods and bell-crank connections the arm or lever F^2 is moved on the feathered shaft E^1. A spring, R^1, is provided for drawing the arm or lever F^2 back when the table k^1 is moved inward.

From the foregoing description it will be seen that when the hand-lever F is depressed it carries with it the cross-head D^1, tubular shaft C^2, and knife-bar B^2, thus presenting the knife to the material to be cut. At the same time the bar or lever F^2 is depressed, and, through the connecting-rod G^1 and pivoted arm H^1, the ratchet is caused to take a new hold on the ratchet-wheel I, so that when the lever F is again raised the knife is withdrawn, and the material to be cut is fed forward, ready to be acted upon again.

The automatic movement of the knife to and from the material to be cut is effected in the following manner: The worm-wheel C^1 on the tubular shaft A^1 works into or engages with a toothed wheel, R^2, on shaft S. Said shaft is also provided with a ratchet-wheel, S^1. A double-armed lever, S^2, which is hung loosely on the shaft S, is provided at one end with a pawl, T, which engages with the ratchet-wheel S^1. The other end of the lever S^2 is connected by a cord or rod, *d*, to the hand-lever F.

It will be seen that as the shaft S is revolved by means of the worm-gear and pinion-wheel, and the pawl T engages with the ratchet-wheel S^1, the outer arm of the lever S^2 is raised and the inner depressed, which, by its connection with the hand-lever F, depresses it, pulling down the cross-head D^1 and shaft C^2, thus bringing the knife in contact with the material to be cut.

T^1 is a segment, provided with a slot, in which are placed two adjustable pins, T^2 T^3, the upper one of which releases the pawl T from the ratchet-wheel S^1, thus allowing the knife to be raised by the springs E E. The lower pin re-engages the pawl and sets in operation the gearing heretofore described for feeding down the knife into the material to be cut, and can be adjusted to suit the various thicknesses of cork.

As it may be necessary at times while the machine is in operation to remove the knife immediately out of the material that is being cut, or when it is desired to work the knife down by the hand-lever F alone, a cord, V, is attached to the arm V^1 of the pawl T and passes over a pulley on the top of the machine, which, on being pulled, releases the pawl from the ratchet-wheel and causes the knife to ascend, and, being secured at a length suitable for preventing the pawl from striking the lower pin T^3 and engaging with the ratchet-wheel, the knife is thus kept up and out of the material being cut.

The automatic feeding forward of the material to be cut is effected in the following manner: The rod X passes loosely through a hole in the upper part of the machine, through the cross-head D^1, and a foot-plate, *f*, which allow it a free movement up or down. The upper part of the rod has a thread cut upon it, on which are adjustable nuts *m n*. At its lower front part is secured a projecting pin, *w'*. Y is a clutch-lever, with an arm, *y*, for the attachment of a spring, *g*, having another arm, y^2, connected with the rear end of its shaft. P is a pin on the front side of the lever V^2, and *h* a spring to raise the lever. When the cross-head D^1 descends, the projection W, coming in contact with the lever V^2, forces it downward; and when the pin *p* on its side meets with the clutch Y, the latter is moved around on its axis until the pin slips into the cavity, being assisted by the spring *g* acting

on the arm y. Here the pin is retained and held, and with it the lever V^2. On the ascent of the cross-head D^1, carrying with it the inner tube C^2 and knife, and when near the top of the stroke, when the knife is completely out of the material being cut, the cross-head D^1 strikes against the adjustable nuts n, causing the rod X to be lifted, and, by means of the pin w' striking against the arm y^2 in its ascent, lifts the clutch Y, thereby liberating the lever V^2, which ascends by the spring h. The nut m is simply for retaining the rod X in its bearings. It will thus be seen that the movement downward of the lever V^2 enables a new hold to be taken on the ratchet-wheel I, as before described, and that this is retained until the lever F has raised the knife securely out of the cork wood, when the lever V^2 is liberated, and, in ascending, causes the material to be cut to be fed forward before the knife again descends.

A rod, a, passes through the inner shaft, C^2, with a collar adjusted and fastened near its middle, which rests upon the projection inward of the arm D through the vertical slot in the outer shaft, A^1. The upper end of the rod passes through the upper portion of the machine, where it is provided with suitable weights b, and the lower end rests upon the cork below when the knife is depressed, thus serving to steady the cork while being cut. By the adjustment of its collar, the pressure upon the cork is not removed until the knife is out of the cork, and the same adjustment allows the pressure of the rod and its weights to come upon the cork before the knife begins to cut on its downstroke.

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

1. In a cork-cutting machine, a revolving knife sliding within a frame secured to the tubular shaft A^1, capable of being moved downward toward and into the material to be cut by means of the cross-head D^1 (or its described equivalent) and adjusted by means of set-screws, whereby the cork or other material may be cut straight or at any desired angle, substantially as described.

2. The combination of the hand-lever F, cross head D^1, (or its described equivalent,) tubular shaft C^2, and arm D with the knife and knife-bar B^2, all arranged substantially as described, and for the purpose set forth.

3. The combination of the hand-lever F, cross-head D^1, (or its described equivalent,) tubular shaft C^2, arm D, knife-bar B^2, and guide-rods D^2 with the springs E E, substantially as shown and described.

4. The tubular shaft A^1 and knife-carrying frame B^1, provided with the vertical and longitudinal slots C, in combination with the knife and knife-bar B^2, substantially as described.

5. The combination of the tubular shafts A^1 C^2, slotted frame B^1, arm D, knife-bar B^2, central rod a, and cross-head D^1 (or its described equivalent) with the hand-lever F, all arranged substantially as described, and for the purpose set forth.

6. The combination of the cross-head D^1, (or its described equivalent,) lever V^2, clutch Y, spring h, ratchet-wheel I, bevel-wheels I^2 and k, and disk k^2 (or their described equivalents) with the frame L^2, whereby the material is fed forward as the knife is raised, all constructed and arranged substantially as described, and for the purpose set forth.

7. The combination of the worm-gear C^1, double lever S^2, pawl T, and adjustable pins T^2 and T^3 with the hand-lever F, whereby the knife is moved automatically to and from the material to be acted upon, as also the cord V, by which this automatic feeding is disengaged and knife released, all arranged to operate substantially in the manner and for the purpose set forth.

8. The combination of the arm F^2, spring R^1, and bell-crank levers P^2 and P with the screw-shaft N^1, whereby the movable table is adjusted to suit various-sized pieces of cork and the slotted lever F^2 is moved on the feathered shaft, substantially as described.

9. The cork-carrying frame L^2, made adjustable to suit cork slabs of varying widths, in combination with the spring M^2 and the driving-disk k^2, all constructed and operating substantially as set forth.

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Witnesses:
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EDWARD L. FREE.