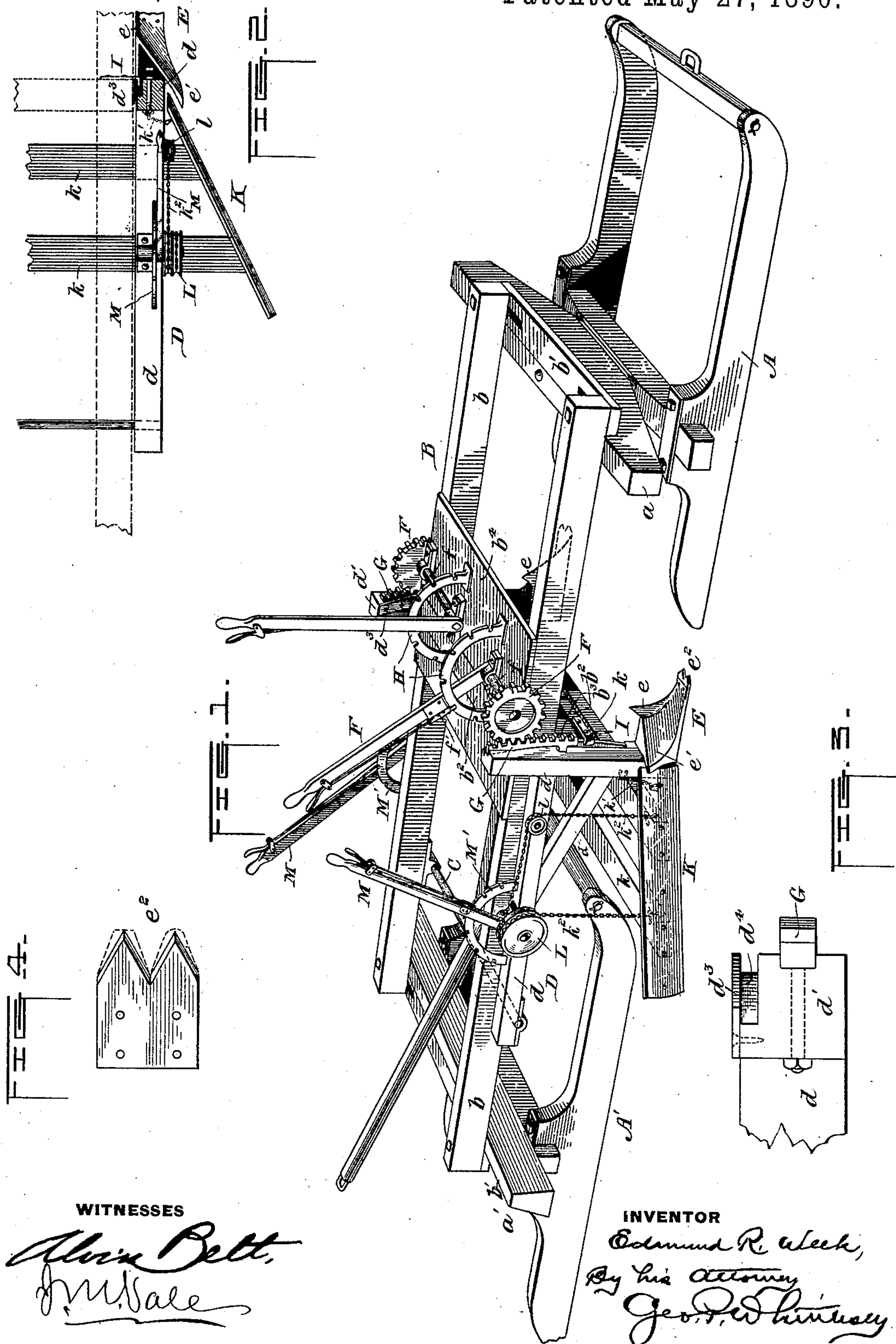


(No Model.)

E. R. WEEK.
TRACK CUTTER FOR LOGGING ROADS.

No. 428,658.

Patented May 27, 1890.



WITNESSES

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TRACK-CUTTER FOR LOGGING-ROADS.

SPECIFICATION forming part of Letters Patent No. 428,658, dated May 27, 1890.

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To all whom it may concern:

Be it known that I, EDMUND RICHARD WEEK, a citizen of the United States, residing at Stevens Point, in the county of Portage and State of Wisconsin, have invented certain new and useful Improvements in Track-Cutters for Logging-Roads; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to devices for removing obstructions and impediments from tracks for vehicles, and more especially to those which cut or scrape superfluous ice and snow from the tracks or roads for logging-sleighs. The shoes of logging-sleighs are sometimes made flat, but more usually convex, so that they form a concave rut or runner-bed in the snow. To strengthen the track and make it capable of carrying heavy loads, the lumbermen pour or sprinkle water into these ruts, which freezes and forms a smooth hard bottom of ice for the sleds to run on. From repeated treatment of this kind and from the packing of the snow on either side, the tracks for the runners gradually become elevated, uneven, and crooked, so that the sleds are liable to slue off.

The purpose of my invention is to cut out a part of the accumulated ice and snow and make a smooth, straight, even bed below the surface of the packed snow.

The invention consists in a pair of knives, cutters, or plows supported on a frame-work that is carried by a pair of bob-sleds, preferably rather long, and set but a short distance apart. The cutters, being placed between the sleds, operate to true up or "joint" the track, cutting more off the high places than from the low portions, and tending to straighten out the crooked places and bring the curves to a regular easy sweep.

In the drawings, Figure 1 is a perspective view of my machine. Fig. 2 is a plan view of certain parts, partly in section. Fig. 3 is a top plan view, on an enlarged scale, of one of the cutter-heads; and Fig. 4 is a top plan view of a cutter-point.

Upon a pair of bob-sleds A A', of ordinary construction, is supported the frame B of my machine, which comprises two sills *b b*, resting on the bolsters *a a'* of the sleds and united by end bars *b' b'*, fastened to the under side of the sills, so as to drop in front of the swiveling forward bolster *a* and behind the rear bolster *a'*. The frame should be provided with suitable bolts or other fastenings to hold it rigidly in place on the sleds. The sills are also united by two heavy cross-beams *b² b²*, preferably arranged to lie about midway between the sleds, as shown, the lower one being fastened to posts *b³*, depending from the sills.

A flooring *b⁴*, of suitable extent to afford room for the man in charge of the machine, is laid upon the sills. In the drawings it is partly removed to show the mechanism more clearly.

Near one end of the frame, and preferably behind the cross-bars *b²*, is a transverse shaft C, secured to the under side of the sills and projecting beyond them on each side. On the projecting ends are hinged the cutter-frames D, each comprising a horizontal arm *d*, journaled at its rear end on the shaft C and projecting forward alongside of the sill *b*, a vertical head *d'*, fastened to the forward end of the arm and standing in line with the cross-beams *b²*, and a brace *d²*, extending from the arm *d* to the lower part of the head *d'*. The arm, head, and brace are preferably composed of stout timbers framed together, although any suitable construction may be adopted.

To the foot of the cutter-head is fastened the cutter E, which comprises a strong solid casting having a preferably flat bottom, a flat vertical inner face, and a curved front face projecting downward and forward, the inner edge being armed with a sharp colter-blade *e*, and the surface outside of this blade being beveled off in an easy curve, the whole resembling closely the mold-board of a plow. The outer side of the cutter is vertical and parallel with the inner face, and is provided with a lug *e'*, that projects from its upper half and forms an extension of the mold-board or beveled surface of the front face. The cutter is furnished with a removable multiple-toothed point *e²*, which preferably resembles

a section of the cutter-bar of a mowing-machine, having two or more beveled teeth, whose tips lie in a line substantially at right angles to the line of draft.

5 Each cutter-frame is independently adjustable vertically, in order to enable the cutters to be set to cut a deep or a shallow groove, as desired. I prefer to effect this adjustment by means of a sector or gear-wheel F, meshing with a sector-rack G, bolted or otherwise
10 secured to the cutter-head, the curvature of the rack corresponding with that of a circle struck from the axis of the shaft C. The pinion is fast on a short shaft *f*, preferably
15 journaled in boxes secured to the flooring *b*¹. The shafts *f* run transversely of the machine, and are provided with lever-arms F', which can be locked in any one of several positions by means of spring-latches *f'*, engaging with
20 notched quadrants H, firmly secured to the flooring *b*¹. By throwing the lever forward or backward the cutter-head will be raised or lowered, respectively.

The cutter-heads are guided in their vertical movements by means of guides I, consisting, preferably, of heavy metal straps fastened to the upper and lower cross-bars *b*², and having lips turned at angles engaging with curved flanges *d*³, secured to the inner
30 sides of the cutter-heads, which may be cut away or rabbeted at *d*⁴ to permit the guides to overlap the flanges. These guides also strengthen the cutter-frame to resist lateral strains and wrenches.

35 To roll back the snow and ice dislodged by the cutters, and also to clear a space outside the runner-beds, a wing or scraper K is arranged behind each cutter. It is set at an angle with the line of draft, the forward end
40 resting adjacent to the rear of the mold-board of the cutter, of which the wing forms practically a continuation. The projection *e'* on the mold-board may overlap the wing, as shown, and the end of the wing may be beveled off to fit the side of the cutter-head *d'*.
45 The bottom edge of the wing may be shod with steel or iron, and is preferably curved forward to cut under the snow. The two wings are firmly fastened to one or more cross-bars
50 *k*, thereby forming a rigid frame that is prevented from undue lateral play by the engagement of the forward ends of the wings with the cutter-heads *d'*. The frame is flexibly connected with the cutter-heads by means
55 of short traction-chains *k'*, and can be raised or lowered by chains or cords *k*², attached to each end of the frame and running to drums L, journaled in boxes on the arms *d* of the cutter-frames. The forward chains preferably
60 pass over pulleys *l* to give a direct vertical lift to all the chains. To the shaft of each drum is fastened a lever-handle M, which has a spring-latch *m*, engaging with a notched quadrant M', to permit the wing at either side
65 of the machine to be adjusted at any desired height relatively to its cutter.

In Fig. 1 the wing and cutter on the right

hand of the machine are shown lowered, while those on the left hand are raised.

The operation of my machine is as follows: 70
The depth of cut to be given to the runner-bed having been determined, the cutter-frames and wings are adjusted to the proper positions and the machine is drawn over the road. The cutter-points chip and break the ice in 75
the runner-bed, grooving it out to the right depth. The line of the tips of the teeth being at right angles to the line of draft, there is no side draft nor any tendency to swerve from the track. The ice and snow plowed 80
up by the cutter is deflected by the mold-board to the outside of the runner-bed, where it is swept up and pushed aside by the wings, together with the snow, ice, and rubbish that lie in the path of the wings, leaving a smooth 85
clear space outside of the runner-beds. By making the wings of suitable depth the machine will operate in comparatively deep snow and leave a road of ample width for the unobstructed passage of the logging-sleighs and 90
their loads. The cutters act in a manner similar to the irons of a carpenter's jointing-plane, taking off all the knolls and unevennesses, whether vertical or lateral, and making a regular even bed for the runners. This effect is due to the long sled-base on which the machine is carried, which tends to prevent any considerable deviation of the cutters from their true course, either vertically or laterally. When from repeated sprinkling 100
the runner-beds become filled up or uneven, the machine can be again run over the road, restoring it to proper condition.

It will be noticed that each cutter-frame and wing is controlled by entirely distinct 105
and independent mechanism, so that my machine can be adapted for use on roads of different widths, if desired, by the easy expedient of making the cross-bars *b'* *b*² and the wing-frame adjustable in length, as by slots 110
and bolts, (indicated in Fig. 1,) or in any other suitable manner.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 115

1. The combination, with the sleds and the supporting-frame mounted thereon, of cutters vertically adjustable on said frame, and wings arranged in the rear of the cutters and adjustable vertically with reference thereto, 120
substantially as described.

2. The combination, with the sleds and the supporting-frame, of the vertically-adjustable cutter-frame supported thereby and carrying a wing that is itself vertically adjustable with 125
reference to the cutter-frame, substantially as described.

3. The combination, with the sleds and the supporting-frame, of cutter-frames, each hinged to the supporting-frame at one end, 130
and means for raising and lowering the other end of each cutter-frame, substantially as described.

4. The combination, with the sleds and the

supporting-frame, of the cutter-frames, each independently hinged to said frame at one end and having a cutter-head at the other end, guides secured to the frame and engaging
5 with the cutter-heads, and a sector-rack and gear for raising and lowering each cutter-head, substantially as described.

10 5. The combination, with the supporting-frame, of the arm d , hinged to the frame at its rear end and carrying a cutter-head d' at its other end, provided with the flange d^3 , the cutter E, and sector-rack G, a gear F, meshing with the rack, and lipped guides I, engaging with the flange d^3 , substantially as de-
15 scribed.

20 6. The combination, with the arm d , carrying the cutter-head d' , of the wing K, rigidly fixed to the bars k k and connected with the cutter-head, the lifting-chains k^2 , and the drum L, mounted on the arm d , substantially as described.

7. The combination, with the supporting-frame, of the independently vertically-adjustable cutter-frames and the rigid wing-frame independently adjustable on the cut-
25 ter-frames, substantially as described.

8. The combination, with two bob-sleds having long runners and set near together, thereby giving a long sled-base, of a frame mounted on said bob-sleds and supporting a
30 pair of cutters between the sleds in line with but separate from the runners, whereby the machine is adapted to true up the runner-beds of a logging-road with but slight deviation from its true course, substantially as de-
35 scribed.

In testimony whereof I affix my signature in presence of two witnesses.

EDMUND RICHARD WEEK.

Witnesses:

A. R. WEEK,

L. R. HUDERSON.