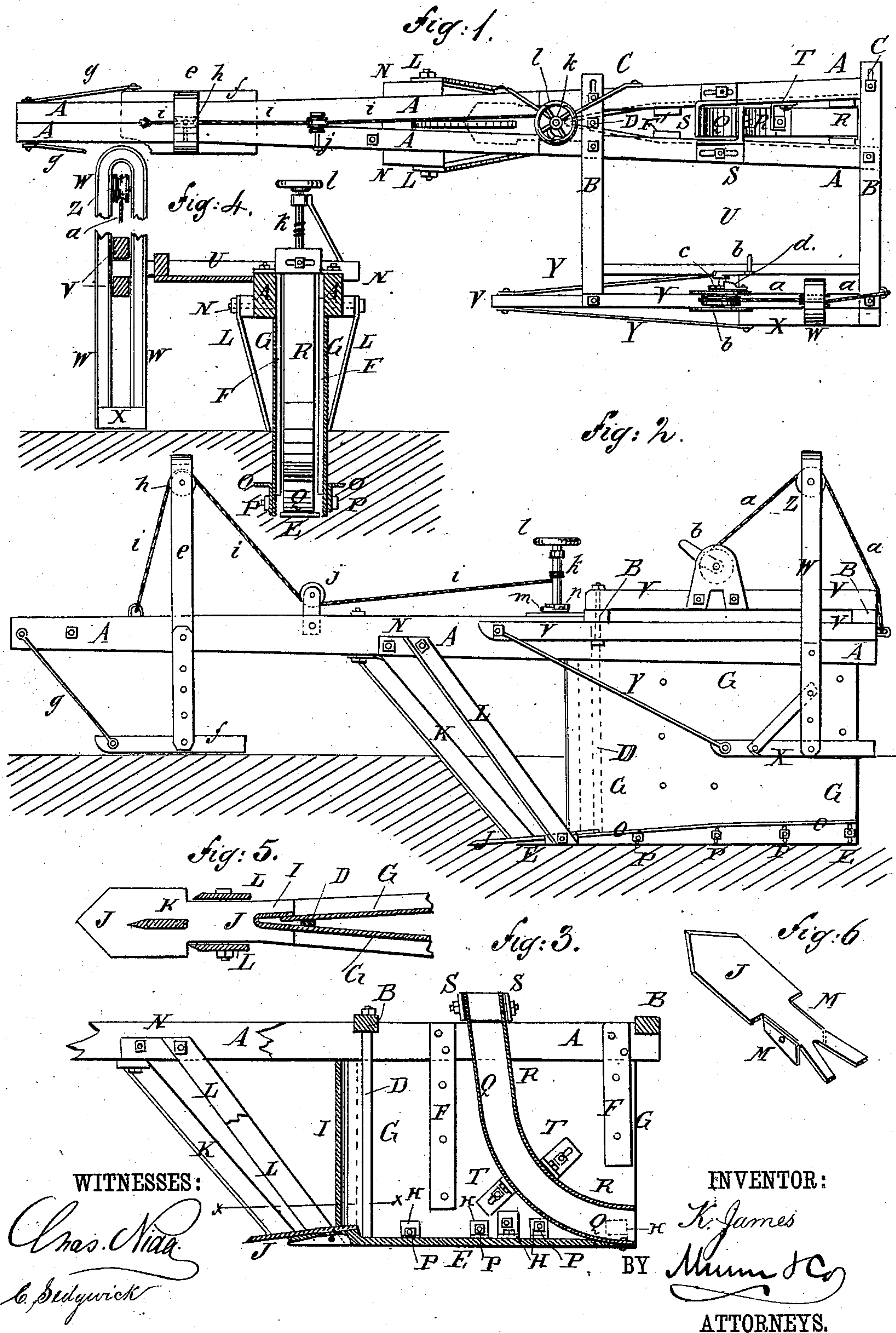


(No Model.)

K. JAMES.
TILE DITCHER.

No. 294,049.

Patented Feb. 26, 1884.



UNITED STATES PATENT OFFICE.

KERWIN JAMES, OF ADAIR, IOWA.

TILE-DITCHER.

SPECIFICATION forming part of Letters Patent No. 294,049, dated February 26, 1884.

Application filed April 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, KERWIN JAMES, of Adair, in the county of Adair and State of Iowa, have invented a new and useful Improvement in Machines for Making Tile-Ditches, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation, partly in section, of the rear part of the same. Fig. 4 is a sectional rear elevation of the same. Fig. 5 is a sectional plan view of a part of the same, taken through the line *x x*, Fig. 3. Fig. 6 is a perspective view of the shear.

The object of this invention is to facilitate the making of tile-ditches.

The invention consists in a machine for making tile-ditches, constructed with two beams connected adjustably at their rear ends by cross-bars, and provided with cutters attached at their lower ends to a shear and to a base-bar, with which and the beams are connected side plates having between them curved plates to guide the tiles into place. With the cross-bars are connected a slotted standard, a foot, hinged draw-rods, and a rope, pulley, and windlass for keeping the machine erect. With the forward parts of the beams are connected a slotted standard, a hinged foot, hinged draw-rods, and a rope, pulleys, and capstan for regulating the depth at which the machine works in the ground. With the shear, the base-bar, and the side plates are connected adjustable flanged plates to assist in opening a channel to receive the tiles. The upper ends of the curved guide-plates are connected with the beams by slotted angle-plates, so that the said upper ends can be adjusted midway between the beams, and will be securely held in place, all constructed and operating as will be hereinafter fully described.

A are two beams, the forward ends of which are bolted together.

To the upper sides of the beams A, at their rear ends, and at a little distance from their rear ends, are bolted two cross-bars, B, which are slotted, as shown in Fig. 1, to receive the

fastening-bolts C, so that the rear ends of the said beams A can be adjusted at a greater or less distance apart, according as larger or smaller tiles are to be laid.

In the forward cross-bar, B, between the bolts C, is formed a slot, to receive the upper end of the rod or long bolt D, so that the said rod can be readily adjusted midway between the beams A at whatever distance apart the said beams may be placed. The lower end of the rod D is secured to the forward part of the base-bar or shoe E.

To the inner sides of the beams A, at their rear ends, and a little in the rear of the forward cross-bar, B, are secured the upper ends of hangers F, to the outer sides of which are secured, by rivets or other suitable means, the side plates, G. The side plates, G, are made of sheet-iron or other suitable material, and are secured at their lower edges to the base-bar E by angle-irons H, the lower arms of which are slotted to receive the fastening-bolts, so that the lower parts of the said side plates can be adjusted to correspond with the adjustment of the rear parts of the beams A. The forward end, I, of one of the side plates, G, is bent into angular form to pass around the forward end of the other side plate and overlap its outer side, so as to cover and protect the said end.

To the forwardly-projecting end of the base-bar E is bolted the shear J, the shank of which is forked to receive the forward ends of the side plates, G, to strengthen the said shear in position.

To the middle part of the shear J is bolted or otherwise secured the lower end of the central cutter, K, which is inclined upward and forward, and has its upper end bent outward and secured to the lower side of one of the beams A by a bolt. The laterally-projecting upper end of the cutter K is slotted to receive the fastening-bolt, so that the said cutter can always be adjusted midway between the beams A.

L are the side cutters, the lower ends of which are bolted to the forward end of the base-bar E, the fastening-bolt also passing through downwardly-projecting flanges M, formed upon the side edges of the shank of the shear J. The inner sides of the lower ends of the side cutters, L, rest against the

flanges M, which may be in contact with or at a little distance from the sides of the base-bar E, so that wider or narrower shears J can be used, as may be required. The upper ends of the side cutters, L, are bolted to the outer sides of the beams A, or to blocks N, attached to the said beams.

O are angle-plates, the lower parts of which fit against the lower parts of the side plates, G, and are secured to the said side plates, G, and to the angle-irons H, that connect the said side plates with the base-bar E by bolts P, as shown in Figs. 3 and 4. The plates O are slotted to receive the bolts P, so that the said plates O can be adjusted to give a greater or less inclination to the upper parts or flanges of the said angle-plates, as larger or smaller tiles are to be used. The angle-plates O are arranged with their upper parts or flanges in line with the shear, and are designed to raise or pack the soil, so as to form a space to receive the tiles.

Q R are two curved plates placed between the frames A and side plates, G, and which extend from the upper sides of the said beams A to the lower rear corner of the said plates G, to form a channel to conduct the tiles into the lower part of the opening in the soil, formed by the machine. The lower end of the lower plate, Q, is secured to the rear end of the base-bar E by a rivet or other suitable means. The upper ends of the guide-plates Q R are bolted to the upper arms of the angle-irons S, which extend across the space between the beams A, and are slotted horizontally to receive the fastening-bolts, so that the upper ends of the curved guide-plates Q R can be adjusted and held midway between the beams A, at whatever distance apart the said beams may be placed. The lower arms of the angle-irons S rest upon the upper sides of the beams A, and are slotted longitudinally to receive the fastening-bolts, so that the upper ends of the guide-plates Q R can be adjusted wider apart or closer together, as larger or smaller tiles are to be used. The guide-plates Q R are further secured in place by the angle-irons T, attached to them and to the side plates, G, so that the middle and lower parts of the said guide-plates can be adjusted to correspond with the adjustment of their upper ends. With this construction, the angle-irons S serve as a guide-spout when introducing the tiles into the space between the guide-plates Q R.

The cross-bars B project at one side of the machine, and to them is attached a platform, U, to receive and carry the tiles, so that they can be readily fed into the machine successively and in contact with each other, and will be laid in the ground in a continuous line.

To the outer ends of the cross-bars B are attached one or more bars, V, which are placed parallel with the line of draft, and around which is passed a slotted standard or bow, W. The lower end of the standard W is attached to a foot, X, to the forward corners of which are hinged the lower ends of two rods, Y. The

forward ends of the rods Y are hinged to the forward projecting end of one of the bars V, so that the foot X will be drawn from the said bar V, and can be adjusted at any desired distance below the said bar V. The lower side of the forward end of the foot X is beveled, so that the said foot will pass over the surface of the ground easily. In the upper part of the slot in the standard W is journaled a pulley, Z, over which passes a cord, a. One end of the cord a is attached to one of the cross-bars B, and its other end is attached to a windlass, b, attached to the bar V, at the other side of the standard W from the point of attachment of the cord a. With this construction the weight of the bars B V and the platform U will be supported by the cord a and standard W, so as to hold the machine in vertical position at whatever depth it may be working in the ground.

The windlass b is provided with a ratchet-wheel, c, and pawl d, to hold it and the cord a securely in position when adjusted.

Around the forward part of the beams A is passed a slotted standard or bow, e, the lower end of which is hinged to a foot, f. To the forward corners of the foot f are hinged the lower ends of two draw-rods, g, the forward ends of which are hinged to the outer sides of the forward ends of the beams A. In the upper part of the slot in the standard e is journaled a pulley, h, over which passes a cord, i, one end of which is attached to one of the beams A. The cord i passes around a guide-pulley, j, journaled to a support attached to the beam A at the other side of the standard e from the point of attachment of the said cord i. The other end of the cord i is attached to a vertical shaft or capstan, k, which is journaled to bearings attached to one of the beams A, and has a hand-wheel, l, attached to its upper end, for convenience in operating it. The shaft k is held in any position into which it may be adjusted by a pawl, m, pivoted to the beam A, and which engages with the teeth of a ratchet-wheel, n, attached to the said shaft. With this construction the depth at which the tile is laid in the ground can be readily controlled by operating the capstan k l to tighten and slacken the cord i.

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

1. In a machine for making tile-ditches, the combination, with the beams A, adjustably secured together at their rear ends, of the side plates, G, and the base-plate E, the said side and base plates being adjustably connected together, substantially as herein shown and described.

2. In a machine for making tile-ditches, the combination, with the beams A and the slotted bars B, connecting the rear ends of the beams together, of the side plates, G, the base-plate E, and the rod D, the said side and base plates being adjustably connected together, substantially as herein shown and described.

3. In a machine for making tile-ditches, the combination, with the shear J, the base-bar E, the angle-irons H, and the side plates, G, of the adjustable flanged plates O, substantially as herein shown and described, to assist in opening a channel to receive the tiles, as set forth.

4. In a machine for making tile-ditches, the combination, with the adjustable beams A, the side plates, G, and the base-plate adjustably connected to the side plates, of the shear J, provided with flanges M, and the central and side cutter, K L, secured to the shear and beams, substantially as herein shown and described.

5. In a machine for making tile-ditches, the combination, with the adjustable beams A and the curved guide-plates Q R, of the slotted angle-plates S, substantially as herein shown and described, whereby the said guide-plates can be adjusted midway between the beams, and will be securely held in place, as set forth.

6. In a machine for making tile-ditches, the combination, with the cross-bars B, of the bar

V, the slotted standard W, the foot X, the hinged draw-rods Y, and the rope, pulley, and windlass *a Z b*, substantially as herein shown and described, whereby the machine is kept in an erect position, as set forth.

7. In a machine for making tile-ditches, the combination, with the adjustable beams A and the side plates, G, adjustably connected to the base-plate, of the guide-plates Q R and the angle-irons S T, for adjusting the said guide-plates midway between the beams and side plates, substantially as herein shown and described.

8. In a machine for making tile-ditches, the combination, with the beams A and the bars B V, of the platform U, the standard W, the foot X, the brace-rod Y, the cord *a*, and windlass *b*, substantially as herein shown and described.

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Witnesses:

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W. D. GIFFIN.