(No Model.) 2 Sheets—Sheet 1.

C. A. BARNES.

TILE LAYING MACHINE.

No. 304,776. Patented Sept. 9, 1884.

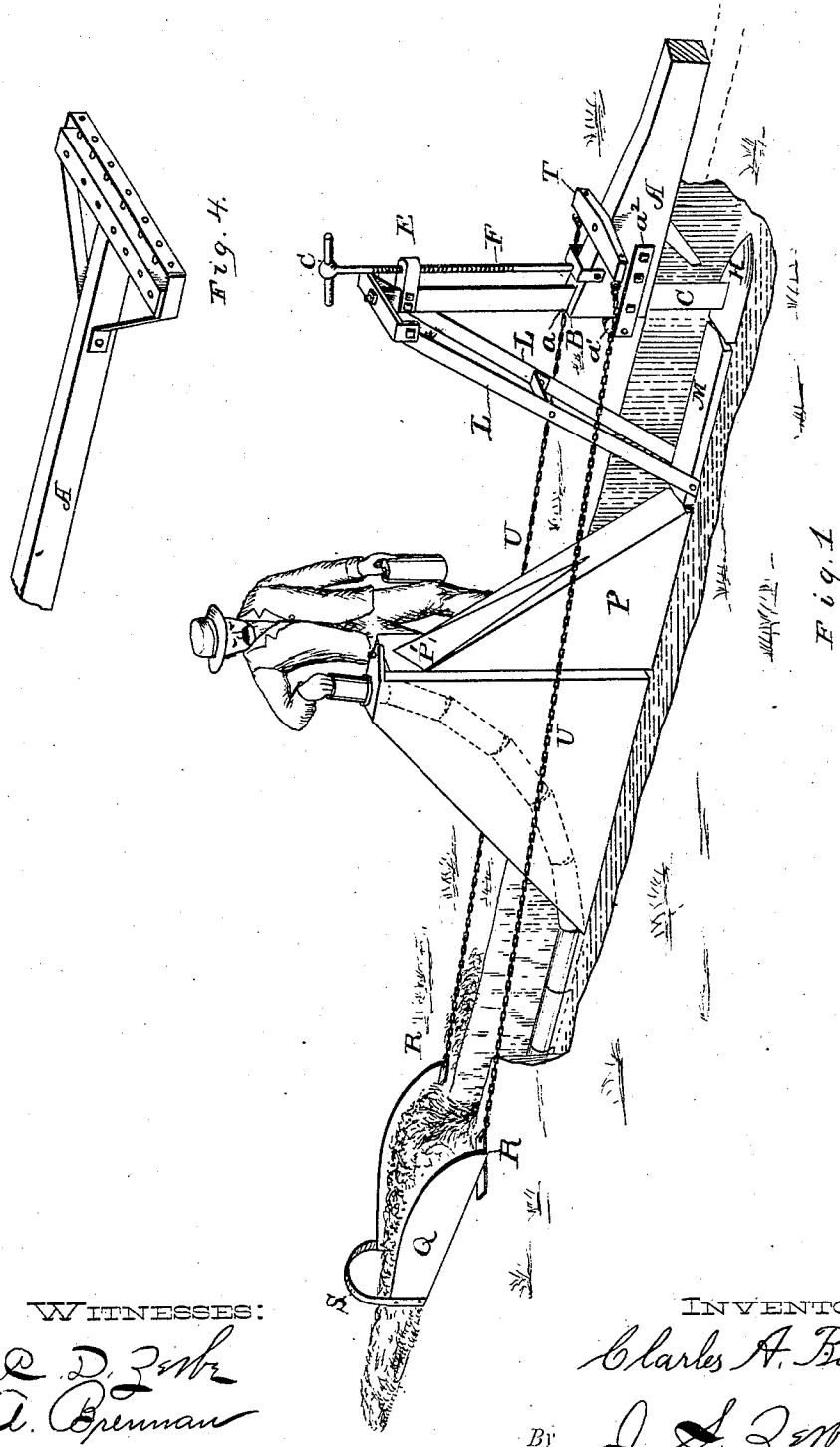

Fig. 1.

Fig. 4.

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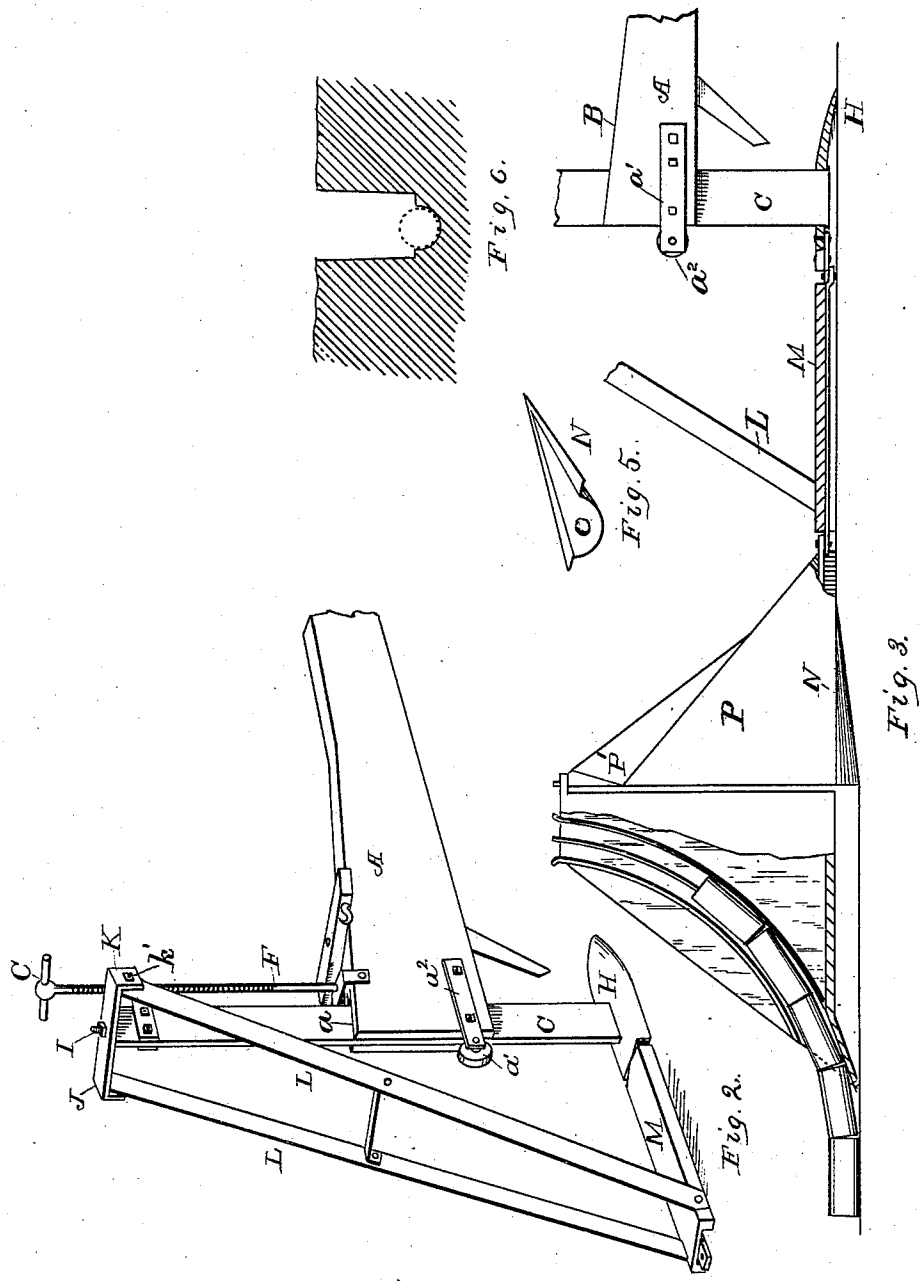

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UNITED STATES PATENT OFFICE.

CHARLES A. BARNES, OF WEST LIBERTY, IOWA.

TILE-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 304,776, dated September 9, 1884.

Application filed February 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. BARNES, of West Liberty, in the county of Muscatine and State of Iowa, have invented a new and useful Improvement in Tile-Laying Machines, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of a ditcher and drain-tile-laying machine. Fig. 2 is a rear perspective view of the ditcher. Fig. 3 is a side view, partly in section, of the same. Fig. 4 is a transverse bar at the forward end of the beam for attaching the devices. Fig. 5 is a perspective view of the groove-forming shoe; and Fig. 6 is a sectional view of the ditch.

The object of the present invention is to improve the tile-laying machine, No. 285,206, lately patented to me. In said invention and patent I provide a mole or share with two parallel vertical cutting-blades for cutting and slicing the earth the requisite depth and width, and the slice so cut was raised up by a follow mold-board so arranged that as the earth was elevated it was thrown out of the ditch to one side. In said invention it was necessary, in constructing the mole and cutters, to have a double beam between which vertical cutting-blades operated. The construction, therefore, was not only expensive, but the machine was not efficient for all classes of work. To remedy these defects, therefore, I have made the herein-described improvements, which consist in first providing a single draft-beam, the rear end of which is vertically grooved to receive a vertical cutting-blade adapted to slide in said groove. At the upper end of this blade is a right-angled arm, which contains a burr, and through this burr is placed a screw-threaded rod, the lower end of which rests in a keeper on the draft-beam, so that when the rod is turned the cutting-blade will be raised or lowered. The lower end of the cutting-blade is provided with a mole of peculiar form and shape, and to the rear end of this mole is hinged a follower-mole. From the rear end of the follower-mole on each side is a cutting-blade, which extends upwardly and forwardly, and is attached to a cross-arm hinged to the upper end of the forward cutting-blade. The sloping mold-board elevates the dirt as it is raised on the board and throws the same on the sides of the ditch, all of which will now be set forth in detail.

In the accompanying drawings, A represents the draft-beam, having at the forward end the cross-bar and metal stay-bar, as set forth in my former patent. The rear end of the beam is enlarged in vertical cross-section, as shown at B, and has a vertical groove, *a*, which receives the vertical cutting-blade C, and affords a space or guide in which this blade has movement, as hereinafter described. The rear end of the beam A has a strap, *a'*, which passes around the knife or blade C, and, with the roller *a* in the strap a^2, which comes at the rear of the blade, not only aids in keeping it in place, but prevents any friction in the up-and-down movement. This cutting-blade has at the upper end a forwardly-projecting arm provided with a burr, E. Through this burr E is placed a screw-threaded rod, F, equipped at its upper end with a cross-head, G. The lower end is socketed to the beam B, so that whenever the rod is turned the cutting-bar C is raised or lowered, as desired. The lower end of the cutting-bar C has a mole or shoe, H. This is made of the width usually desired for drain-tile, and is made sloping from the rear to the front, as shown in Figs. 1 and 2, and is also tapered or sloped from the center to the sides. The extreme upper end of the outer blade C has a stem, I, to which is hinged a cross-bar, J. Each end of the cross-bar is turned down, as shown at K, and provided with an aperture to receive a bolt, K', said bolt being designed to pass through the turned-down ear and through the upper end of the frame or arm L, which projects upwardly and forwardly from the trailing piece M. The trailing piece or shoe is preferably the same width, or slightly narrower, than cutting-shoe H, and is hinged to the rear end of the shoe H. The inclined parallel and cutting arms L, hinged to the cross-arm K, have their lower ends rigidly attached to the rear end of the trailing shoe M, as shown. The cutting-blade C moves vertically in the groove of the beam A, and can be adjusted or regulated at will. Behind the shoe is a follower-shoe, P, having a coping, O, on its under side, N. This is designed to follow after the trailing shoe M, and, by depressing the floor of the ditch formed by the shoe H, make a solid rounding groove

which will be adapted to receive the tile from the tile-laying device which follows.

In my former patent I described and set forth the tile-layer, and it is not, therefore, necessary for me to call attention or describe in this place all the features of this part of the device, and I shall therefore call attention only to those improved features which I design to cover in the present application.

It will be observed that the mold-board P′, which is placed on the inclined front of the follower P in this instance, is so constructed that, being inclined and triangular in cross-section and tapering from its upper portion down, the dirt will be thrown to both sides of the ditch instead of one side only, as in the former patent. Since the cutter-blade C cuts or slices the earth centrally, it is necessary to form the mold-board P′ so that the earth will be thrown from the ditch on both sides. It is apparent that this arrangement will greatly lessen the draft and accomplish the work more perfectly, as I find to be the case in practice.

To the rear of the tile-laying machine is the coverer. This is composed of two vertically-disposed blades, Q Q, having horizontal flanges R R. These blades rest on the surface of the ground on opposite sides of the ditch, and their rear ends are closer together than the forward ends, so that as they move forward the front spreading ends gather the dirt which had previously been elevated to the sides of the ditch, and the blades cause the dirt to fall into the ditch. The rear ends of the blades are held together by an arch, S. Each blade has its forward end connected with the cross-beam or swivel T on the draft-beam by means of a chain, U.

What I claim is—

1. The sloping follower P, having on its inclined front the mold-board P′, which is triangular in cross-section and tapering from top to bottom, whereby the earth from the ditch will be thrown on both sides, substantially as shown and described.

2. The vertically-adjustable cutter-bar C, having at the lower end the mole or shoe H, in combination with the follow-mole hinged thereto, and the rear parallel cutter-blades secured to the rear end of the follow-mole and to the upper end of the forward cutter-blade, substantially as herein set forth.

3. The combination of the beam A, having the turf-blade and the rollers, the rear end being vertically grooved, with the vertical cutting-blade C, having the adjusting screw-rod F at its upper end and the shoe or mole H on its lower end, and with the follow-mole and the parallel cutting-blades, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of December, 1883, in the presence of witnesses.

CHARLES A. BARNES.

Witnesses:
HENRY J. HARROP,
JOE BAILEY.