(No Model.)

C. A. BARNES.

TILE LAYING MACHINE.

No. 285,206. Patented Sept. 18, 1883.

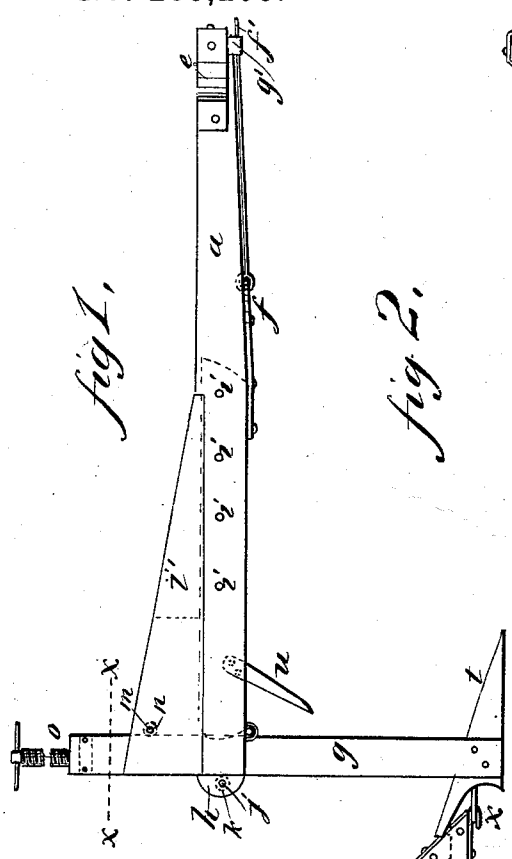


Fig 1.

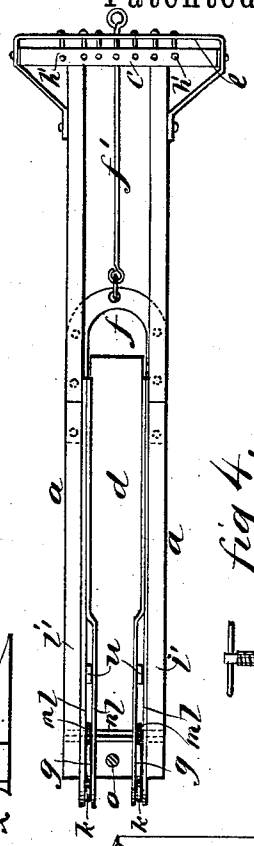


Fig 2.

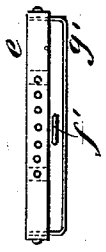


Fig 6.

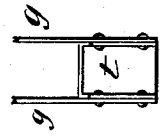


Fig 5.

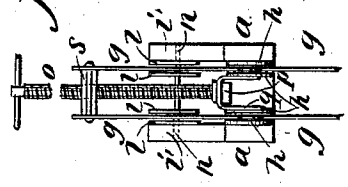


Fig 4.

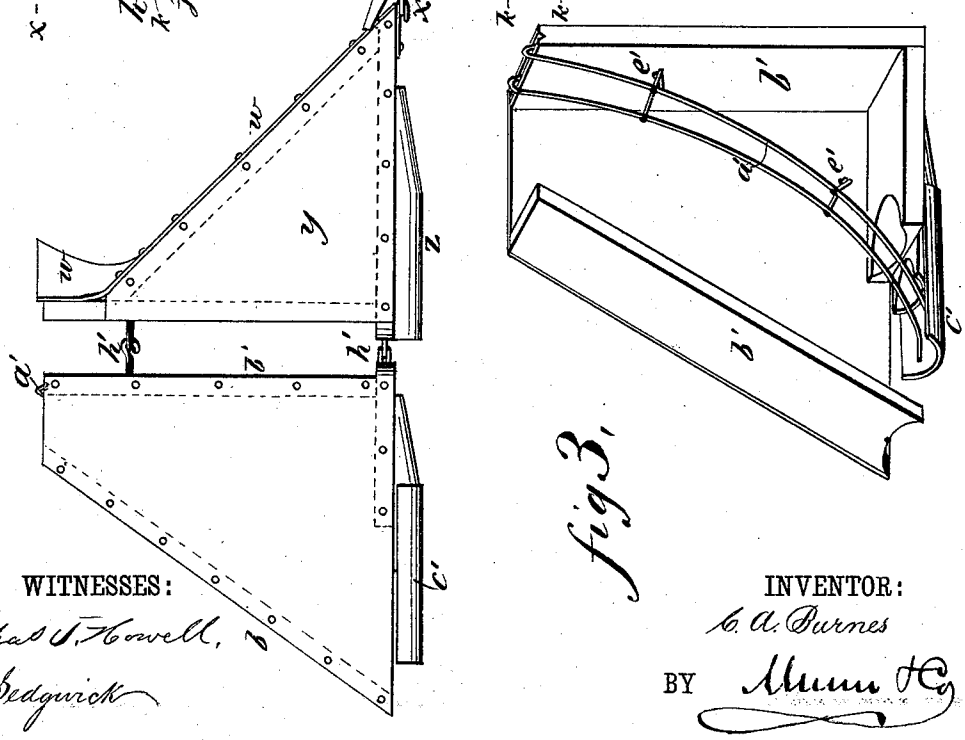


Fig 3.

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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. 285,206, dated September 18, 1883.

Application filed April 13, 1883. (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 Improved Tile-Laying Machine, of which the following is a full, clear, and exact description.

My invention consists of a mold and cutters for cutting the sides and bottom of the ditch, contrived in a simple and substantial arrangement with the beam for being adjustably connected thereto, also of a mold-board attachment for raising out the cut slice and grooving the bottom of the ditch, and also of a tile-laying attachment which follows the mold-board and lays the tile in the ditch before the earth is allowed to cave in, all as hereinafter fully described, and pointed out in the claims.

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

Figure 1 is a side elevation of my improved tile-laying machine. Fig. 2 is a plan view of the beam and the cutters. Fig. 3 is a perspective view of the tile-laying machine with one of the sides of the inclosing-case removed. Fig. 4 is a rear end elevation of the beam and cutter-adjusting device, and Figs. 5 and 6 are details of the cutters and beam.

I construct the cutter-beam by placing two strong bars, *a*, of suitable material, side by side, a suitable distance apart, according to the size of the tiles I wish to lay, connecting them at the front end by the cross-bar *c* and metal stay-bar *e*, also by the wood-filler beam *d* along the middle and back portion, and also by the metal yoke *f* about the middle, to the rear end of which beam I connect the vertical side cutting-blades, *g*, by means of two lower pairs of thin metal plate-strips, *h*, arranged between the side bars, *a*, and the wood filler *d*, securely bolted through them at *i*, and extending back of the rear edges of the cutters, where they are fastened together by a pin, *j*, with a roller, *k*, between them, against which the back edges of the cutters bear, and above these strips I arrange two other pairs of plate-strips, *l*, similarly fastened between the bars *a* and middle beam, and having rollers *m* on a pivot-bolt, *n*, against which the front edges of the cutters bear for being powerfully supported against the stress of the work, and at the same time being so held that they may be shifted up and down readily while at work between the holding-plates and rollers by the adjusting-screw *o*, which is swiveled at *p* in a bracket, *q*, riveted or bolted to the inner strip-plates, *h*, and screws in a tapped hole in the connecting-bar *s* of the upper ends of the side cutters, thus enabling the cutters to be shifted up or down, as may be required.

To the lower end of the cutters I attach the mole or share *t*, for cutting up the earth from the bottom of the ditch, and a little in advance of the cutters I attach the grass or turf cutters *u* to the beam, the mole being a cast-metal device and the cutters being thin blades of suitable material.

For raising the earth out of the ditch I have a mold-board, *w*, arranged on a suitable sloping supporting-frame that hooks on the mole *t* at *x*, and has vertical sides *y*, to prevent the earth from falling in behind the mold-board, and is shod with a half-round shoe, *z*, which is to be pressed into the bottom of the ditch by the weight of the earth on the mold-board, to make the required curved bed in which to lay the tile.

The tile-layer consists of the curved chute *a'* of wires or rods arranged in the case *b'*, inclosing the sides, front, and rear, and part of the bottom of the chute, but open at the top and at the rear portion of the bottom, where the chute discharges into a trough, *c'*, in which it is designed that the tiles shall strike at the forward lower corners when sliding down and assume the horizontal or nearly horizontal position before they touch the earth, to prevent the ends from digging into the earth and forcing particles up between the ends and making loose joints. The two rods forming the chute are hooked onto the upper end of the case *b'* at their upper ends, and are connected at intervals along them to the bottom by jointed rods or wires *e'*, allowing them to be set apart more or less, according to the size of the tiles to be laid. This tile-layer has a vertical front end, which is hooked onto the vertical back end of the mold-board device by suitable hooks and eyes, *h'*, making flexible joints,

which, with the flexible joint at x, enables the machine to work freely and to turn out of the straight course to some extent.

The hitching-rod f' is connected to the yoke f some distance from the front end of the beam, and swings laterally in the guard g' at the front end of the beam, to be secured at any desired inclination by a pin in any one of the series of holes h'.

The upper strip-plates, l, for the support of the cutter-blades g, are supported by the re-enforcing bars i', attached to the upper edges of the beams.

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

1. In a tile-laying machine, the combination, with the beam a, provided with the plates h i' l, of the vertical side cutters, g, the rollers k m, the mole t, and means for adjusting the said cutters and mole, substantially as herein shown and described.

2. The beam consisting of side bars, a, middle bar, d, connecting-bar c, yoke f, re-enforcing bars i', and having the upper and lower pairs of plates, l and h, for connecting the cutters to it, substantially as described.

3. In a tile-laying machine, the combination, with the beam a, the vertical side cutters, g, mole t, and means for adjusting said cutters and mole, of the mold-board w, connected to the rear of the mole by a flexible joint, substantially as herein shown and described.

4. In a tile-laying machine, the combination, with the beam a, the side cutters, g, and mole t, of the mold-board w, having vertical sides y and the half-round shoe, and connected to the rear of the mole by a flexible joint, substantially as herein shown and described.

5. In a tile-laying machine, the combination, with the side cutters, g, mole t, and mold-board w, connected to the mole by a flexible joint, of the tile-laying attachment a', connected to the mold-board by flexible joints, substantially as herein shown and described.

6. The tile-chute a', consisting of parallel rods and jointed rods or wires e', substantially as herein shown and described.

7. In a tile-laying machine, the combination, with the case b', of chute a' e' and the bottom trough, c', substantially as herein shown and described.

CHARLES A. BARNES.

Witnesses:
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