No. 713,692. Patented Nov. 18. 1902.

A. SCHOPF.

TILE LAYING MACHINE.

Application filed July 26, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

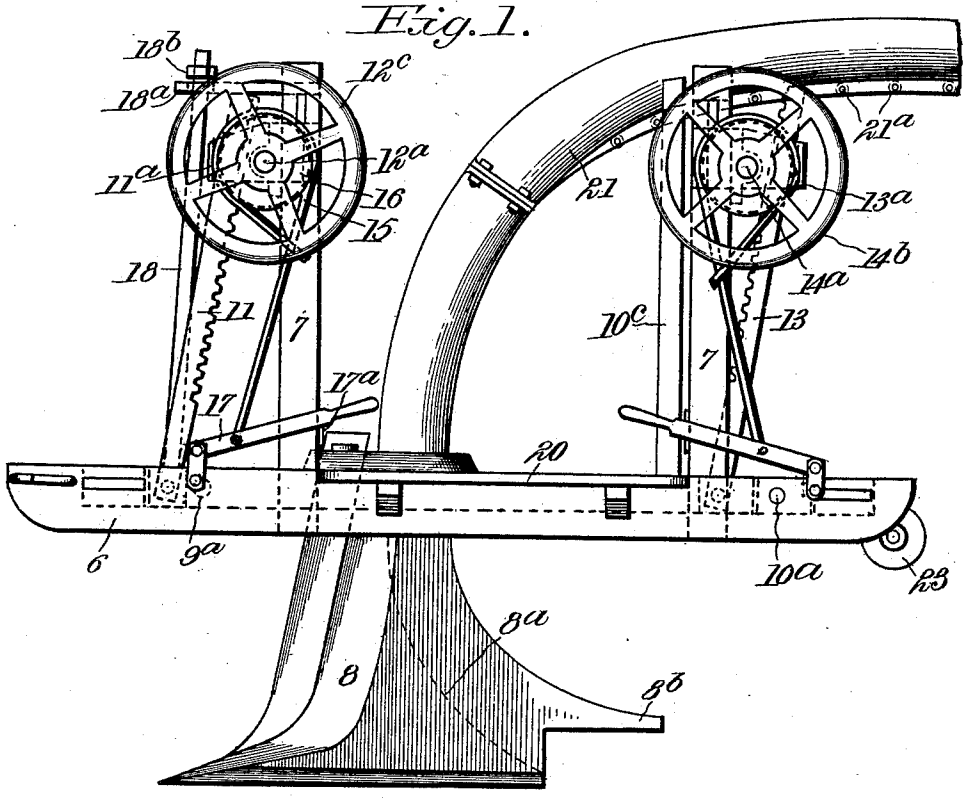
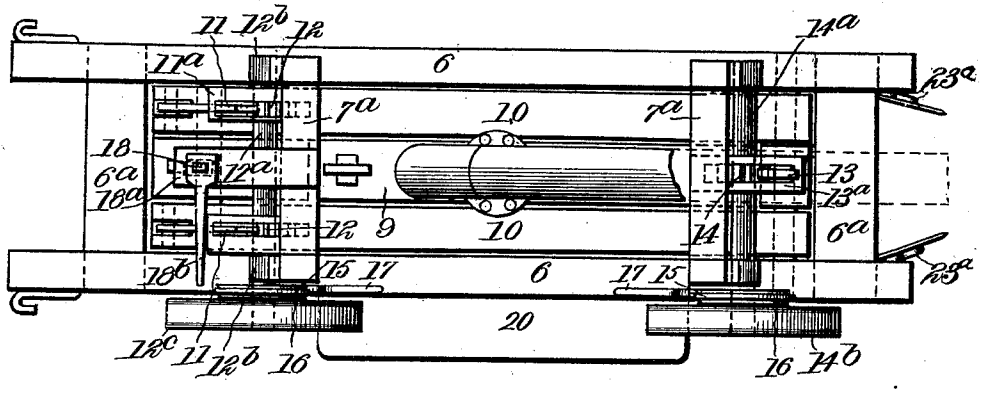


Fig. 2.



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Fig. 4.

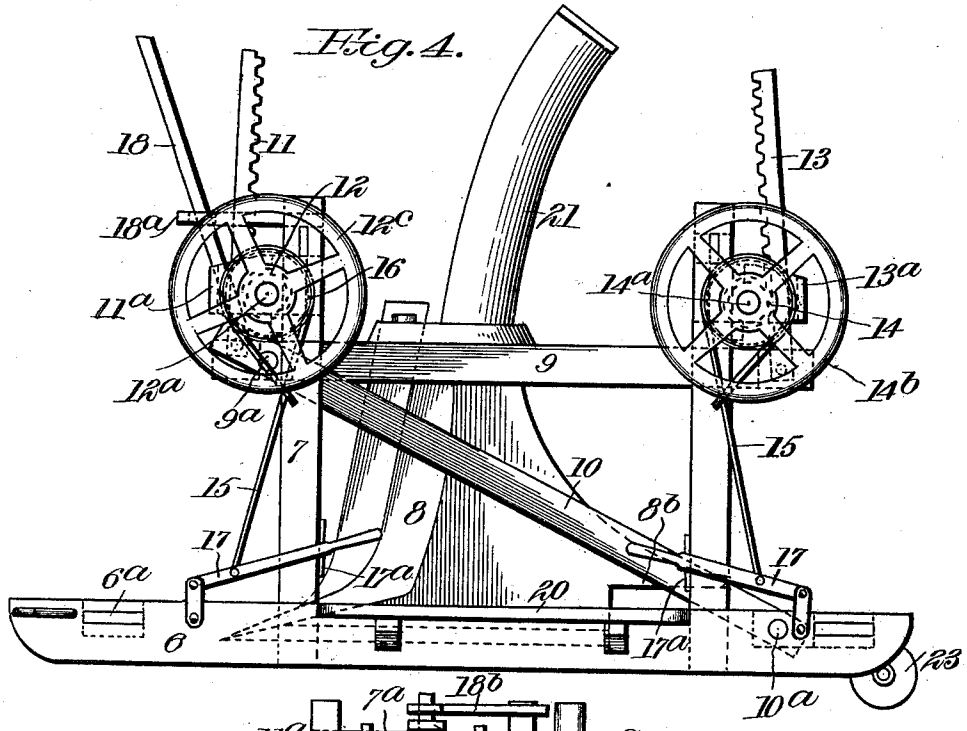
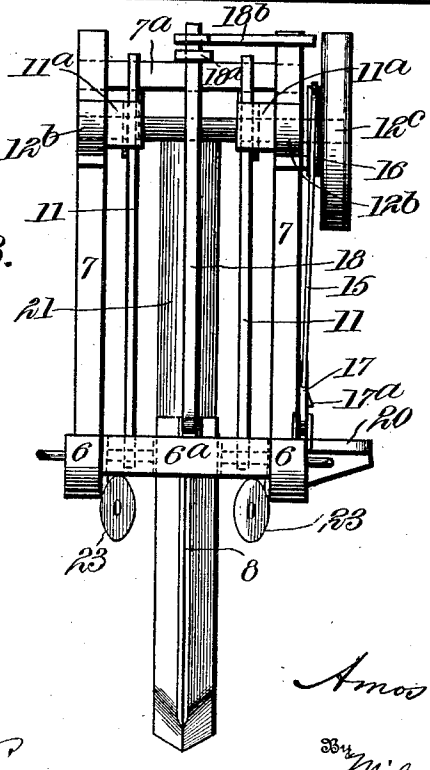


Fig. 3.



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UNITED STATES PATENT OFFICE.

AMOS SCHOPF, OF NEWPORT, MISSOURI.

TILE-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 713,692, dated November 18, 1902.

Application filed July 26, 1902. Serial No. 117,169. (No model.)

To all whom it may concern:

B it known that I, AMOS SCHOPF, a citizen of the United States, residing at Newport, in the county of Barton and State of Missouri, have invented certain new and useful Improvements in Tile-Laying Machines; and I do hereby 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 figures of reference marked thereon, which form a part of this specification.

This invention relates particularly to that kind of tile-laying machines in which the ditch is made by a mole-plow and the tiles delivered and laid in the ditch behind the plow by being fed through a tube contained within the plow-standard.

The object of the invention is to form a more efficient plow and tile-delivery construction than heretofore.

Another object is to provide improved and novel means for supporting and tilting the plow and for adjusting the same vertically.

A further object is to generally simplify and improve the construction of such machines, as will more fully hereinafter appear.

In the accompanying drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a top plan view thereof. Fig. 3 is a front elevation. Fig. 4 is a side elevation with the plow raised from the ground.

Referring specifically to the drawings, 6 indicates runners joined at front and rear ends by cross-pieces 6^a, forming a framework for the support of the machine on the ground. Front and rear standards 7 are properly joined to the runners and are connected at the top by cross-bars 7^a.

The plow is indicated at 8, being of the usual mole type and having the well-known tube, (indicated in dotted lines at 8^a,) through which the tiles are fed and delivered behind the plow. At the end of the tube I provide an overhanging portion 8^b, extending at the back to prevent earth from dropping on a tile before it leaves the tube. This prevents choking of the tube. It also prevents spreading or separation of the tiles, since each tile will settle in place against the preceding one before the earth falls on it. At the top the plow-standard and casing containing the tube are secured in any suitable or proper manner to a plow-beam 9, through which the tube is made to extend. This beam 9 is located between two supporting-beams 10. The beams 9 and 10 receive the thrust of the plow and are so connected as to permit the plow to be raised or lowered and tilted.

The rear ends of the beams 10 are pivotally connected and supported between the runners 6 by a long bolt 10^a, which is of sufficient strength to stand the thrust, and the front end of the beam 9 is pivoted between the front ends of the beams 10 by a bolt 9^a of suitable size and strength. This construction permits the front ends of the beams 10 to be lifted or lowered and the rear end of the beam 9 to be lifted or lowered independently, allowing the plow to be lifted as desired and also tilted, if necessary. The thrust of the plow is received by the beam 9 in tension and by the beams 10 in compression. The means to raise and lower the beams 10 comprise two rack-bars 11, connected to the front end of the beams, and which extend vertically through brackets 11^a, secured to the standards 7 and in engagement with pinions 12 on a shaft 12^a, carried in bearing-brackets 12^b, secured to the standards. The shaft is turned by hand-wheel 12^c. The means to raise and lower the rear end of the beam 9 are substantially identical, comprising a rack-bar 13, secured to the beam and extending through bracket 13^a and in engagement with pinion 14 on shaft 14^a, turned by hand-wheel 14^b. To hold the beams at adjustment, band-brakes 15 extend around friction-wheels 16 on the said shafts and are connected to hand-levers 17, which are pivoted to the runners and may be caught under projections 17^a on the standards to hold the brakes tight. A depth-gage rod 18 is connected to the front end of the beam 9 and passes through a slot in a plate 18^a, secured to the front cross-bar 7^a. This rod has a scale to indicate the depth at which the plow is working. The rod raises and lowers with the beam through the slot in the plate 18^a, and the depth is indicated on the scale at the plate. From the top of the rod 18 an arm 18^b projects laterally and horizontally and acts as a sight-arm in setting grade-stakes for the

ditch and to enable the operator to run the machine on a correct level or grade according to the stakes. A platform for the operator to stand on, is indicated at 20 supported on one of the runners.

It is intended that the supply of tile shall be carried by and supplied from a stone boat or wagon attached to the rear end of the machine, and to facilitate this operation I provide a detachable conveyer-trough 21, inclined outwardly, as shown, and leading to the tube 8^a. This trough is properly shaped and positioned to feed the tile into the mouth of the tube and is supported upon the beam 9 by a standard 10^c. The joint of the standard with the beam is such as to permit the ready removal of the conveyer and standard when desired, as when the plow is lifed out of the ground, as shown in Fig. 4. Such a joint would be formed by entering the lower end of the standard into a mortise in the top of the beam. The trough contains rollers 21^a for the tile to ride on. A pair of scrapers 23 are carried at the rear of the machine by brackets 23^a attached to the frame. These scrapers are preferably of the rolling-disk type, as shown, and they serve to cut the earth at the sides of the ditch and turn it into the ditch to fill the same as well as may be. As will be seen, the construction permits the plow to be tilted and run into or out of the ground, and it may be lifted completely out of the ground, so that it can be transported from place to place on its own runners. The operator standing on the platform can sight ahead over the arm 18^b and raise or lower the plow to the correct depth, first raising or lowering the front end of the beams, which tilts the plow accordingly, so that it will run to the depth desired without placing on the operator the work of the lift or drop.

I consider that the band-brakes above referred to constitute a novel improvement. They will hold the beams at adjustment against any ordinary pressure; but if the plow should strike a large obstacle, such as a boulder, they will let the wheels 16 slip without stripping the pinions or otherwise wrecking the machine.

What I claim is—

1. In a tile-laying machine, the combination with the mole-plow and tile-feeding tube at the heel of the plow, of a detachable tile-conveyer trough delivering to the tube, and extending outwardly to receive the tile from an adjacent tile-supply wagon or boat.

2. The combination with a runner-frame, the plow and the tile-feeding tube, of the tilting vertically-adjustable plow-beam, and the supporting-beams pivoted to the plow-beam and the frame.

3. The combination with the runner-frame and the spaced supporting-beams 10 pivoted thereto, of the plow-beam 9 pivoted between the supporting-beams, and means to vertically adjust the beams.

4. The combination with the frame and the vertically-adjustable plow-beams, of the depth-gage rod having a horizontally-projecting sight-arm, as and for the purpose specified.

5. The combination with the frame, the plow-beam, the supporting-beams hinged to the frame and the plow-beam, and the plow-standard and plow depending from the plow-beam, of the rack-bars connected to the beams, and the shafts supported on the frame and having pinions engaging the racks, to raise or lower the beams.

6. The combination with the frame, the plow-beam, a rack connected to the plow-beam, and a shaft supported on the frame and having a pinion engaging the rack, of a wheel on the shaft, and a band-brake on the wheel to hold the beam at adjustment.

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

AMOS SCHOPF.

Witnesses:
SAMUEL L. HACKNEY,
LEVI E. SHIVE.