(No Model.) 2 Sheets—Sheet 1.

G. KEITH.

TILE LAYING MACHINE.

No. 327,274. Patented Sept. 29, 1885.

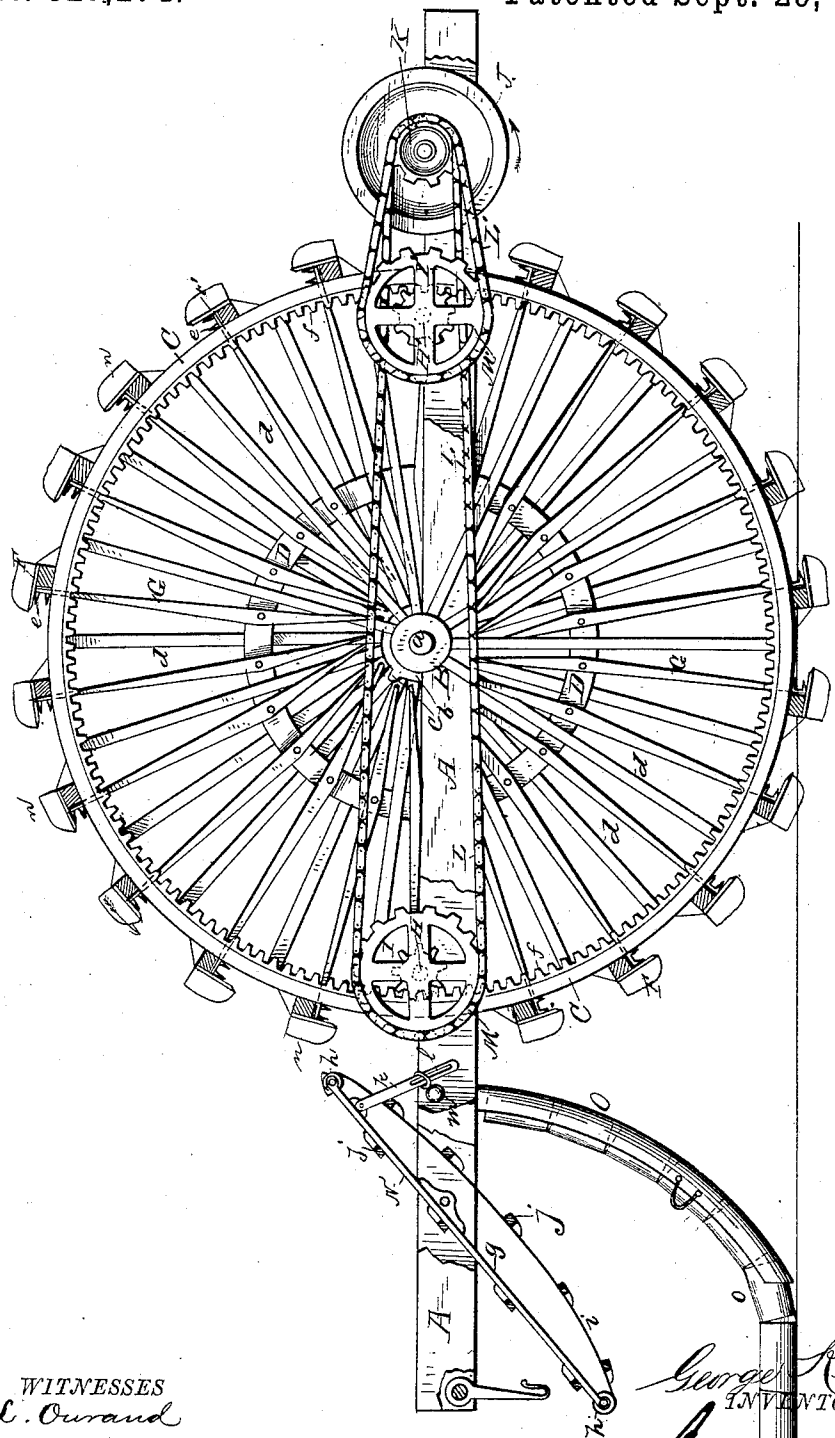


Fig. 1.

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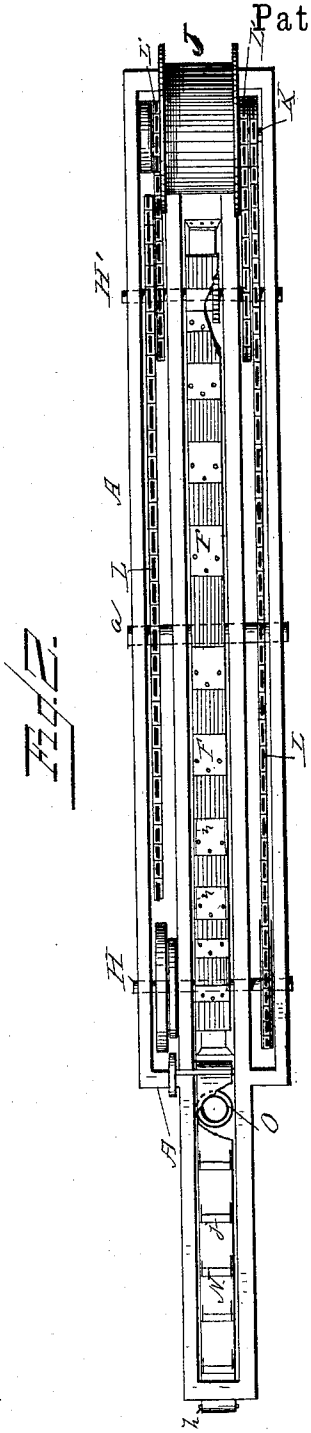


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE KEITH, OF HARMON, ILLINOIS.

TILE-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 327,274, dated September 29, 1885.

Application filed April 26, 1884. Renewed September 3, 1885. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KEITH, a citizen of the United States of America, residing at Harmon, in the county of Lee and State of Illinois, 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 letters or figures of reference marked thereon, which form a part of this specification.

My invention is a machine for digging ditches and laying tiles therein; and it consists in the improved construction and combination of parts hereinafter described and fully set forth.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of sufficient of a ditching and tile-laying machine to illustrate my invention, and Fig. 2 is a plan view of the same.

A rectangular frame, A, is supported and carried by suitable wheels, and has rigidly mounted at or about its center a transverse shaft, *a*, having centrally mounted thereon a disk, *b*, provided with the lips *c*.

Upon the shaft *a* turns a hub, B, having staggered spokes *d*, socketed at their outer extremities in an annular interiorly-toothed band, C. An annular ring, D, concentric with band C, is secured between the staggered spokes midway between the hub B and band C. The periphery of the band C is of a width sufficient to permit the said band to have a broad tread, and carries at regular intervals a series of blocks or projections, to each of which is secured a blade, F, nearly parallel with the periphery of said band. The cutting-edges of said blades F all extend in the same direction.

An opening is formed in the periphery of the band C beneath the projecting portion of each blade F, and through each opening projects one end of a lever, G, radially arranged and centrally pivoted on the ring D, as shown in Fig. 1. The projecting portion of each lever G is provided with spurs *e*, as shown in said Fig. 1.

A transverse shaft, H H′, parallel with the shaft *a*, is journaled near each end of the frame A in the sides thereof, so as to revolve in its bearings, and each shaft H H′ has rigidly mounted thereon a gear-pinion, I I′, meshing with the interior gear-teeth, *f*, of the annular band C. A drum or band-pulley is keyed on a shaft revolving in bearings in the frame A, at one end thereof, and carries two gear-pinions, K. A drive-chain, L, connects one pinion K with a gear-wheel, M, keyed on the end of the shaft H, while a smaller drive-chain, L′, connects the outer pulley K with a gear-wheel, M′, keyed on the projecting end of the shaft H′.

The drum J is driven by any suitable means in the direction indicated by the arrow, Fig. 1, and communicates its motion to the shafts H H′ by means of the gear-wheel and drive-chain connection M M′ L L′. The revolution of the shaft H H′ results in causing the pinions I I′ to rotate the annular band C in the direction indicated by the arrow adjacent thereto, Fig. 1.

The blades F strike the earth on an incline, enter the same, and are elevated with a section of sod or earth, when they again begin to descend and arrive at a point nearly above the inner end of a pivoted discharge-platform, N. The inner ends of their levers G contact with the lip *c* of the central disk, and cause the spurred extremities to move toward the edge of the said blades F and force the earth or sod from beneath the same.

By providing spurs *e* on the levers G the said spurs, when the levers are moved, as previously described, effect the breaking or pulverizing of the earth beneath the blades, so that it can be discharged in a finely-divided condition.

The discharge-platform N preferably consists of a centrally-pivoted frame, *g*, having journaled at each extremity thereof a roller, *h*. An endless web or carrier, *i*, passes around said pulleys, and is provided with a series of transverse bars, *j*, which prevent the earth or sod from being too rapidly discharged therefrom. An arm, *k*, is pivoted at its upper end near the upper end of the frame *g*, and has its lower portion provided with a slot, *l*, adapted to engage with any suitable bolt device, *m*.

A curved depending chute, O, is designed to move with the frame A and deposit the tile-section *o* in the ditch formed by the cutters F.

From the foregoing it will be apparent that the annular band C may be revolved by a minimum amount of power to cause its peripheral cutters to successively enter the earth and cut the ditch, and that said cutters act as scoops to carry portions of the earth up over the band C and automatically drop the earth onto the discharge-platform N through the agency of the spurred levers G whenever the discharged earth is in such a finely-divided condition as to permit the discharge-carrier N to regularly deposit the said earth evenly over tiles laid in said ditch, so as to cover said tiles and fill the ditch.

The arrangement of discharge-platform N prevents the too rapid discharge of the earth therefrom and permits the said platform to be adjusted so as to discharge the earth at any angle of inclination.

In order to cut the sides of the ditch in an even manner, each blade F carries at each side and at right angles thereto a cutter, *n*.

I claim—

1. The combination, in a ditching-machine, of a wheel or annular band mounted upon a suitable shaft, devices for rotating the same, a series of blades arranged peripherally in said wheel or band, a series of pivoted levers extending at one end through the periphery beneath the said blades, and a device for automatically and intermittently contacting with the inner ends of said pivoted levers to move their outer ends beneath the peripheral cutters, substantially as set forth.

2. The combination, in a ditching-machine, of a wheel or annular band mounted upon a suitable shaft, devices for rotating the same, a series of blades arranged peripherally in said wheel or band, a series of pivoted levers extending at one end through the periphery beneath said blades, a discharge-platform, a device for automatically and intermittently contacting with the inner ends of said pivoted levers to move their outer ends as the said blades approach said platform, substantially as set forth.

3. The combination, in a ditching and tile-laying machine, of a wheel or annular band mounted upon a suitable shaft, devices for rotating the same, a series of blades arranged peripherally in said wheel or band, a series of pivoted levers extending at one end through the periphery beneath the said blades, a device for automatically and intermittently contacting with the inner ends of said pivoted levers, a depending chute adapted to lay the tile-sections in a ditch formed by the machine, and a discharge-platform, substantially as set forth.

4. The combination, in a ditching-machine constructed and operating substantially as described, of a series of peripheral blades, a spurred projection located beneath each blade, and devices for intermittently moving the same, as and for the purpose set forth.

5. The combination, in a ditching-machine, of a wheel or annular band mounted on a suitable shaft, devices for rotating the same, a series of blades arranged peripherally in said band and having cutters *n*, a series of pivoted levers extending at one end through the periphery beneath the said blades, and a device for automatically and intermittently contacting with the inner ends of said pivoted levers to move their outer ends beneath the peripheral cutters, substantially as set forth.

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

GEORGE KEITH.

Witnesses:
LLOYD R. HAWLEY,
ARVENE S. HYDE.