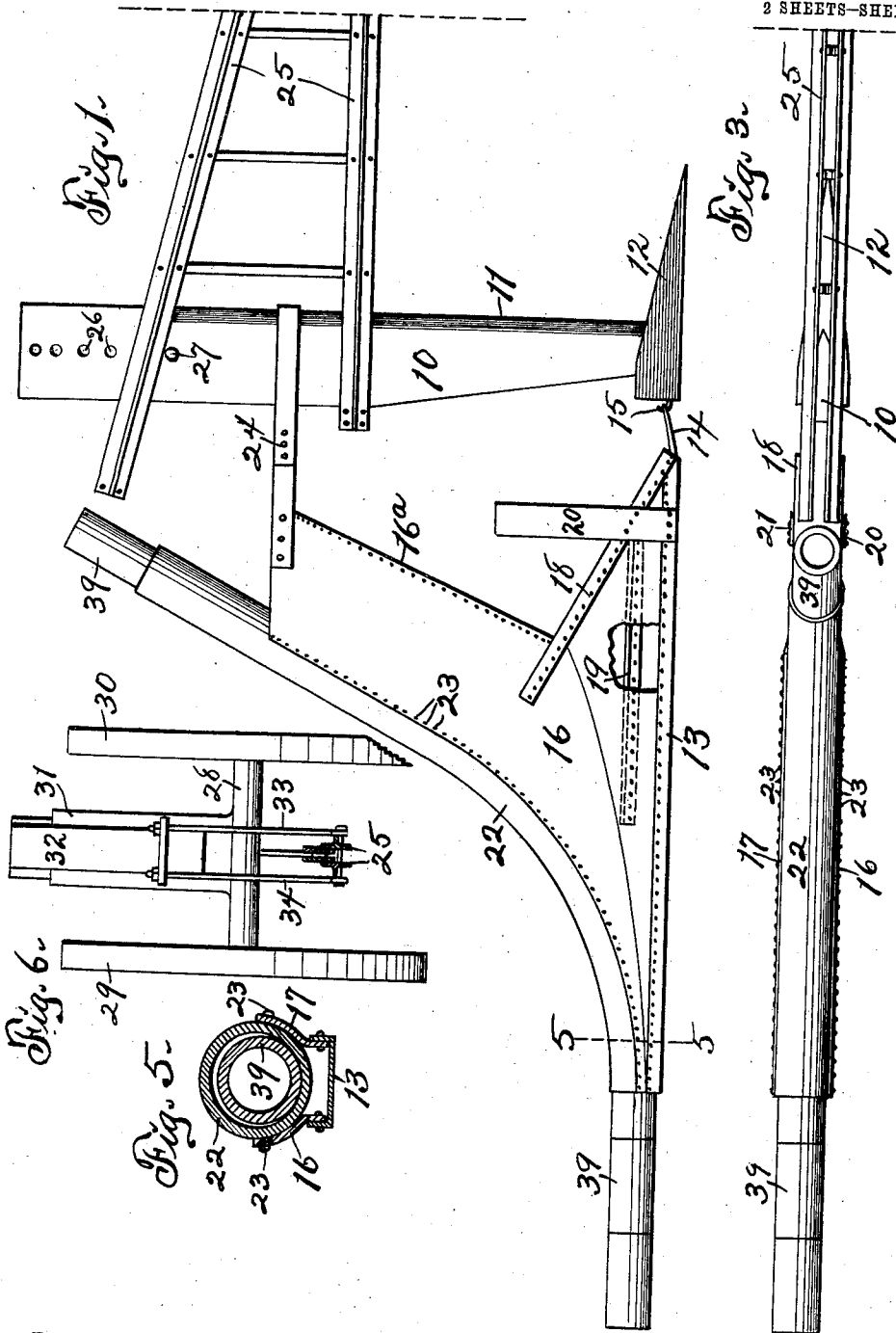


H. M. FISK.
TILE LAYING MACHINE.
APPLICATION FILED AUG. 24, 1910.

991,292.

Patented May 2, 1911.

2 SHEETS—SHEET 1.



Attest:
E. W. Miller.
W. W. Winter.

Inventor:
Henry M. Fisk.
By J. S. Swarth Atty

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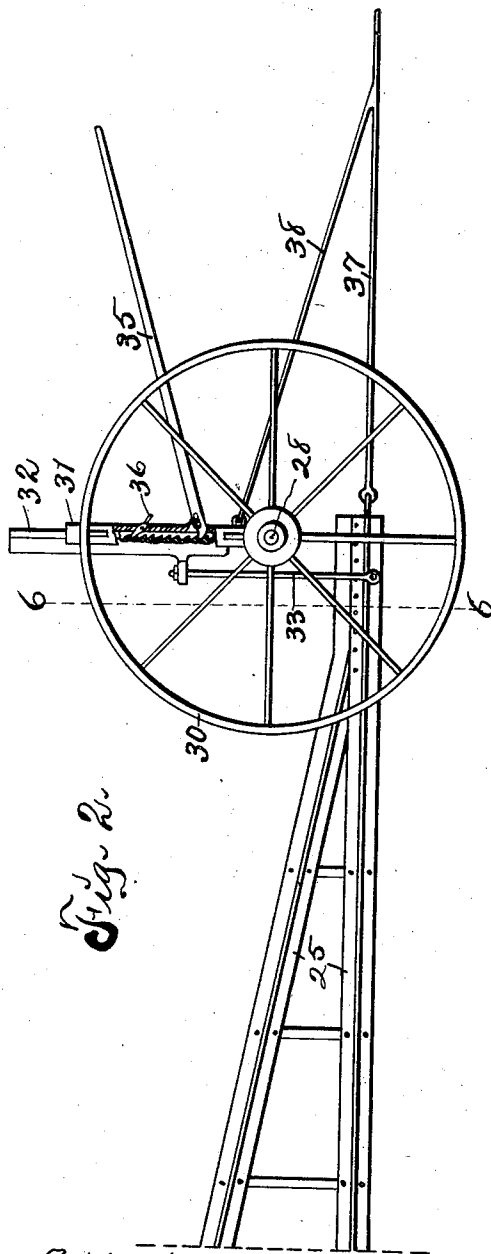


Fig. 2.

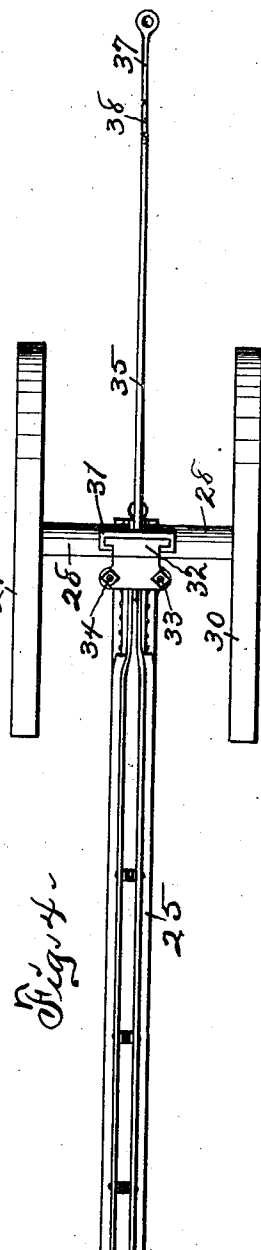


Fig. 4.

Attest:
E. W. Miller
H. W. Winters

Inventor:
Henry M. Fisk.
By J. E. Dwyer Att'y

UNITED STATES PATENT OFFICE.

HENRY M. FISK, OF PELLA, IOWA.

TILE-LAYING MACHINE.

991,292.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed August 24, 1910. Serial No. 579,180.

To all whom it may concern:

Be it known that I, HENRY M. FISK, a citizen of the United States of America, and resident of Pella, Marion county, Iowa, have invented a new and useful Tile-Laying Machine, of which the following is a specification.

The object of this invention is to provide an improved construction for tile-laying machines.

A further object of this invention is to provide improved means for opening a ditch for the reception of tile.

A further object of this invention is to provide improved means for adjusting the depth to which ditch-opening devices may be operated in a tile-laying machine.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a side elevation of the rear portion of a tile-laying machine and Fig. 2 is a side elevation of the forward portion thereof. Fig. 3 is a plan of the device shown in Fig. 1 and Fig. 4 is a plan of the device shown in Fig. 2. Fig. 5 is a cross-section on the indicated line 5—5 of Fig. 1. Fig. 6 is a cross-section on the indicated line 6—6 of Fig. 2.

In the construction of the machine as shown the numeral 10 designates a standard, preferably made of bar steel and formed with a cutting edge 11 at its forward margin. A mole plow 12 is fixed to and inclined forwardly from the lower end of the standard 10. A shoe 13, preferably formed of a channel bar with its flanges extending upwardly, is detachably secured to the rear end of the mole plow 12 such as by an inter-engaging rod 14 and hook 15. The shoe 13 trails behind and in the same horizontal plane with the mole plow 12. Side plates 16, 17 are provided and preferably are made of sheet steel formed as to outline and shaped as to contour suitably for the purpose for which they are to be used. The side plates 16, 17 have plane horizontal marginal portions located between and riveted to side flanges of the shoe 13 and extending the entire length thereof. Triangular notches are formed in the forward margins of the side plates 16, 17 and a mold-board 18 is mounted in an inclined plane on and riveted to the lower walls of said notches. The mold-

board 18 preferably is formed of a channel bar arranged with its flanges extending downward and is connected at its forward end to the forward end portion of the shoe 13. Those marginal portions of the side plates 16, 17 (designated by the numeral 16^a) forming the upper walls of the notches are brought into contact with each other and riveted together and are arranged in horizontal alinement with and at the rear of the standard 10. The upper rear end portion of the mold-board 18 is notched to receive the side plates 16, 17 and is riveted thereto. Stay-bars 19, one of which is shown in Fig. 1, are mounted on and riveted to the lower portions of the side plates 16, 17 and serve to stiffen and strengthen said plates between the shoe 13 and mold-board 18. Knife-bars 20, 21 are fixed to and rise from the forward end portions of the shoe 13 and mold-board 18 and are in parallel vertical planes. The knife-bars 20, 21 are formed with cutting edges on their forward margins and said cutting edges preferably are beveled inwardly. The rear margins of the side plates 16, 17 preferably are curved as shown and are spaced apart to receive a curved feeding tube 22. The curved rear marginal portions of the side plates 16, 17 preferably are secured to the feeding tube 22 by means of cap-screws 23 extending through the plates and screwed into the tube. A yoke 24 is fixed to and extends forward from the upper end portion of the side plates 16, 17 and extends around the central portion of the standard 10, thus slidingly connecting the side plates to said standard. A beam 25 is provided and preferably is constructed of angle bars connected and braced together in rigid and suitable form. The beam 25 is generally A-shaped and the widest portion thereof crosses the standard 10. One arm of the beam embraces the standard and is bolted together at the rear thereof, thus providing means to move the standard and connected parts forwardly in forward movement of the beam. The upper arm of the beam loosely embraces the upper portion of the standard 10. The standard 10 is formed with a plurality of bolt holes 26 in its upper portion and a bolt 27 may be mounted in one or another of said holes and engage beneath the upper arm of the standard, thus providing means for adjusting the altitude of the rear end portion of the beam relative to said standard. A

supporting axle 28 and wheels 29, 30 are provided at the forward end of the beam 25. A standard 31 is mounted on and rises from the axle 28 and a jack-stem 32 is slidably mounted in said standard. Hanger rods 33, 34 connect the jack-stem 32 with the forward end portion of the beam 25. Suitable means are provided for raising and lowering the jack-stem 32 relative to the standard 31 and axle 28, thus raising or lowering the forward end of the beam 25. The operating means may comprise a lever 35 fulcrumed to the standard 31 and adapted to engage a ratchet on the jack-stem 32 (Fig. 2) and a detent 36 pivoted on said standard and also adapted to engage the ratchet. Connected draft bars 37, 38 are secured at their rear ends to the beam 25 and base of the standard 31 respectively and are adapted to be connected at their forward ends to suitable draft power.

By means of the adjustment provided by the jack on the truck and the adjustment between the rear end of the beam 25 and standard 10, the depth of penetration of the standard and mole plow 12 into the earth is governed, regulated and determined. Subject to the adjustment above mentioned the machine is advanced by power applied to the rods 37, 38 and transmitted through the beam 25 to the standard 10. The standard 10 cuts a vertical slit in the earth and the mole plow 12 cuts and forms the bottom of the ditch. The standard 10 advances the side plates 16, 17 through the medium of the yoke 24 and the mole plow 12 advances the shoe 13 through the connections 14, 15. In such advance of the shoe and side plates the knife-bars 20, 21 cut and form the sides of the ditch and the mold-board 18 raises the soil cut by said knife-bars and also by the standard 11 and mole plow 12 and opens the lower portion of the ditch. At the same time the shoe 13 travels on the bottom of the ditch formed by the mole plow 12. The connected forward portions of the side plates 16, 17 cut and separate the soil on the same line as the standard 10. The separated rear marginal portions of the side plates 16, 17 spread apart the soil and open the ditch for the passage of the feeding tube 22. Tile 39 is introduced in a continuous stream through the feeding tube 32 and lays on the bottom of the ditch opened by the side plates.

I claim as my invention—

1. In a tile-laying machine, a standard, a mole plow thereon, a shoe connected to said mole plow, side plates carried by said shoe, a yoke on said side plates slidably embracing said standard, a mold-board on said plates and shoe, a tube carried by the side plates, and means for applying draft to the standard.

2. In a tile-laying machine, a standard, a

mole plow thereon, a shoe detachably connected to said mole plow, side plates carried by said shoe and slidably connected to said standard, said side plates arranged on planes converging toward the forward margins of the plates, a mold-board on said plates and shoe, a tube carried by and between the rear portions of the side plates, and means for applying draft to the standard.

3. In a tile-laying machine, a standard, a mole plow thereon, a shoe connected to said mole plow, side plates carried by said shoe and connected to said standard, a mold board on said plates and shoe, knife-bars arranged vertically and carried by said shoe and mold-board, a tube carried by the side plates, and means for applying draft to the standard.

4. In a tile-laying machine, the combination of a standard, a mole plow thereon, a shoe detachably connected to said plow, side plates carried by said shoe, forward portions of said side plates connected in alinement with said standard, sliding connections between said side plates and standard, a mold-board in inclined position on said shoe and side plates at the rear of said plow, a curved tube carried by and between rear marginal portions of the side plates, and means for applying draft to said standard.

5. In a tile-laying machine, the combination of a standard, a mole plow thereon, a shoe detachably connected to said plow, side plates carried by said shoe, forward portions of said side plates connected in alinement with said standard, sliding connections between said side plates and standard, a mold-board in inclined position on said shoe and side plates at the rear of said plow, knife-bars spaced apart and mounted vertically on the forward portions of the shoe and mold-board in advance of the connected portions of the side plates, a curved tube carried by and between rear marginal portions of the side plates, and means for applying draft to said standard.

6. In a tile-laying machine, the combination of a standard, a mole plow thereon, a shoe detachably connected to said plow, side plates carried by said shoe, forward portions of said side plates connected in alinement with said standard, sliding connections between said side plates and standard, a mold-board in inclined position on said shoe and side plates at the rear of said plow, knife-bars spaced apart and mounted vertically on the forward portions of the shoe and mold-board in advance of the connected portions of the side plates, stay-bars mounted on and between the side plates between the shoe and mold-board, a curved tube carried by and between rear marginal portions of the side plates, and means for applying draft to said standard.

7. In a tile-laying machine, ditch-opening

devices, a tile tube thereon, a beam engaging said devices at its rear end, a truck at the forward end of the beam, and a jack connecting said truck and beam.

said truck and beam, and means for applying draft power to said beam.

Signed by me at Pella, Iowa, this 22nd day of November, 1909.

HENRY M. FISK.

Witnesses:

HARRY VALKENBURG,
J. V. D. ROOVAART.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."