

E. M. FOURNET.
MACHINE FOR DIGGING AND CLEANING DITCHES.
APPLICATION FILED NOV. 19, 1912.

1,095,097.

Patented Apr. 28, 1914.

3 SHEETS-SHEET 1.

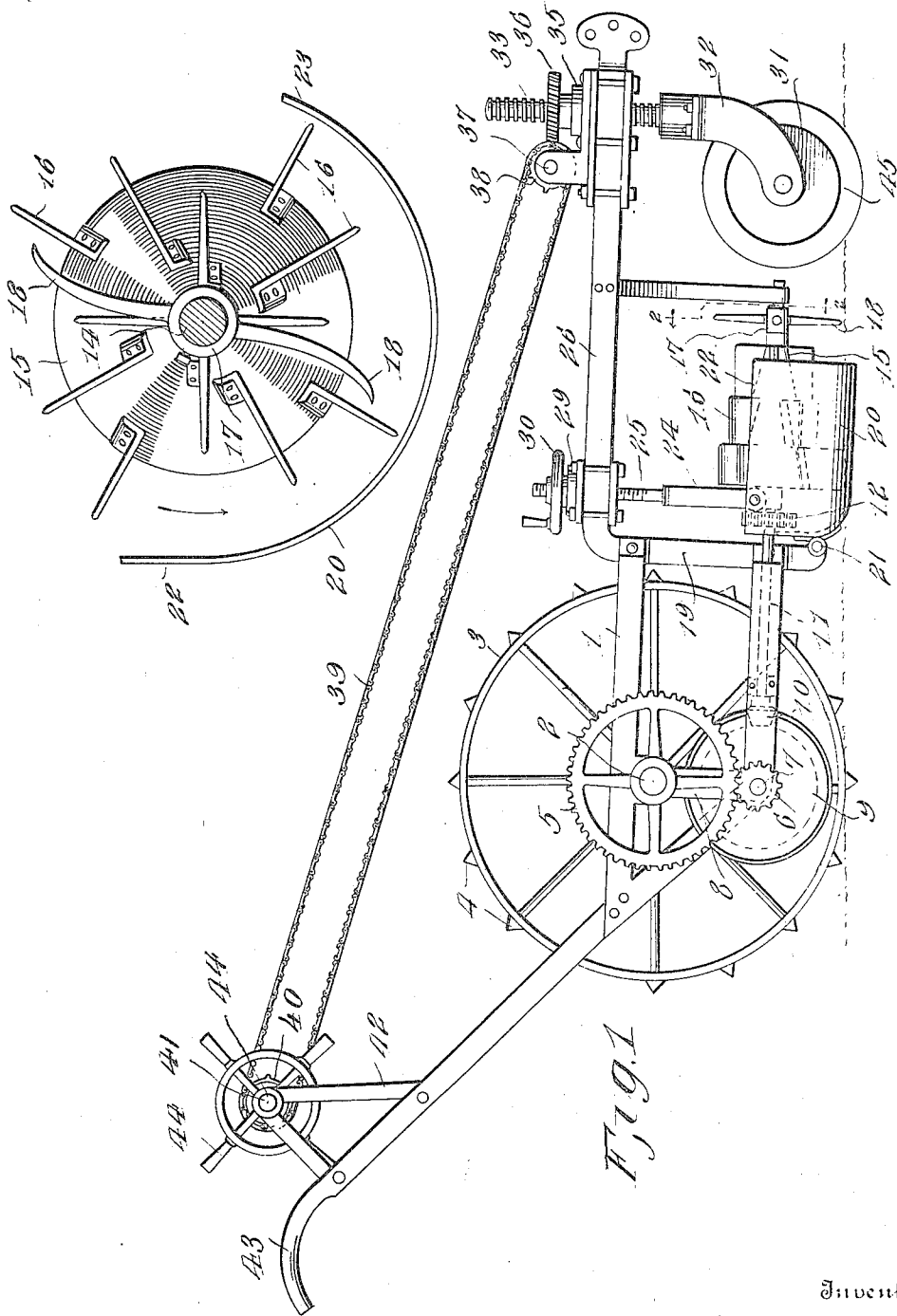


FIG. 1

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Wm. J. Dwyer.

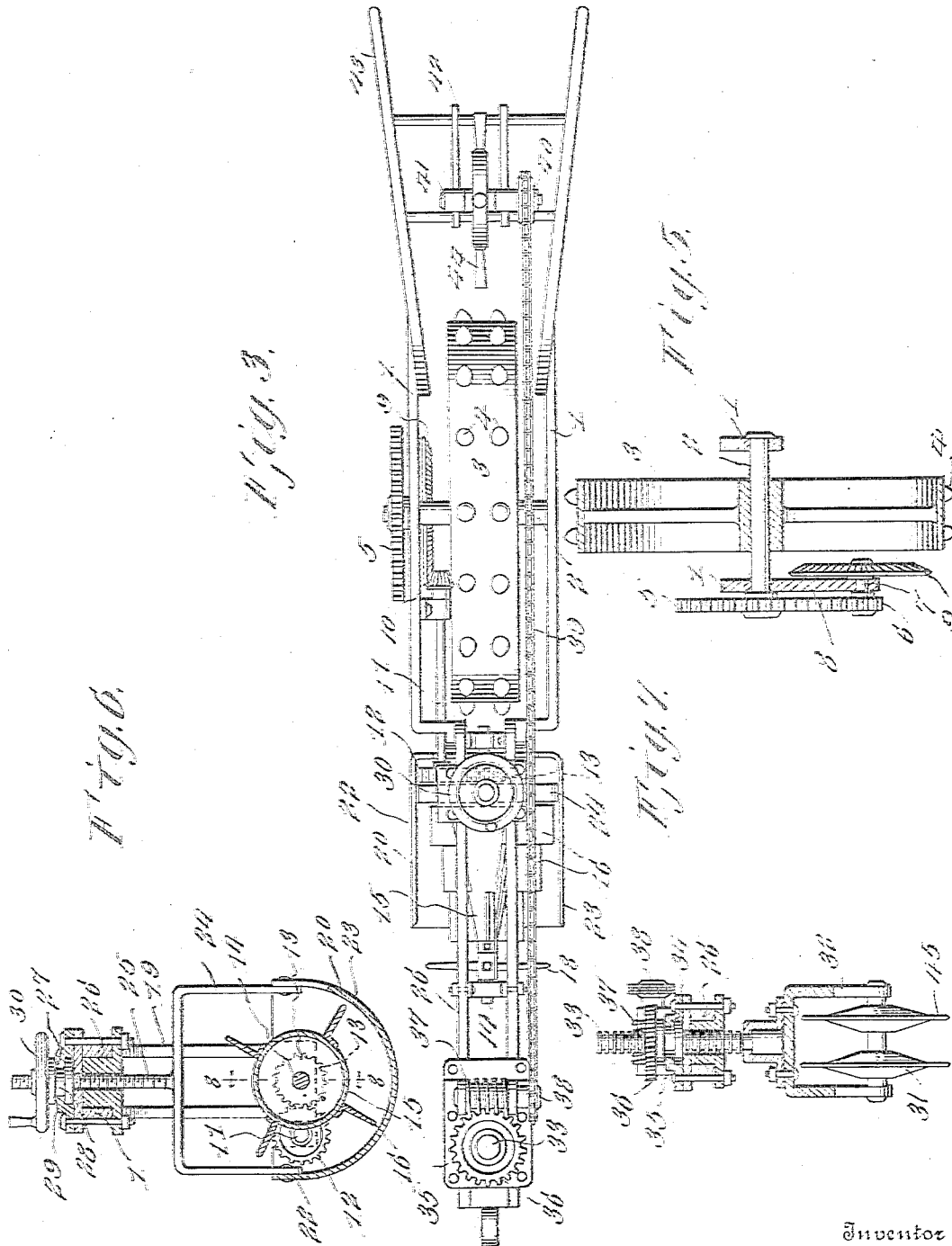
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

EDMUND M. FOURNET, OF ST. MARTINVILLE, LOUISIANA.

MACHINE FOR DIGGING AND CLEANING DITCHES.

1,095,097.

Specification of Letters Patent.

Patented Apr. 28, 1914.

Application filed November 19, 1912. Serial No. 732,262.

To all whom it may concern:

Be it known that I, EDMUND M. FOURNET, a citizen of the United States, residing at St. Martinville, in the parish of St. Martin and State of Louisiana, have invented new and useful Improvements in Machines for Digging and Cleaning Ditches, of which the following is a specification.

This invention relates to machines for digging and cleaning ditches, and it has particular reference to an improved machine for digging and cleaning that class of ditches which are known as quarter drains. A quarter drain in this connection is understood to be a shallow ditch running at right angles to and connecting and emptying at one or both ends into larger drains. Any machine that would simply drop the excavated dirt at the sides of the ditch when ditching or cleaning would necessarily fill up the larger drains at the intersections, thus obstructing the flow of water and preventing proper drainage. The dirt would also be liable to be quickly washed back into the ditches or quarter drains.

In order to avoid these objections, the object of the present invention is to construct a ditching and cleaning machine whereby the dirt excavated will be scattered or diffused over a considerable area in a relatively thin layer so as to form no pronounced obstruction at any point and lessening the liability of its being washed back into the drains.

A further object of the invention is to construct a ditching and cleaning machine having cutting members and paddles operating at relatively high speed and serving to loosen and pulverize the dirt and to scatter or diffuse the same over considerable area.

A still further object of the invention is to produce a ditch digging and cleaning machine comprising an adjustably supported scoop, a drum supported for rotation with respect to said scoop and having earth engaging blades or paddles, and cutting or digging implements supported in advance of the drum to cut and loosen the soil in advance thereof.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been

illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings,—Figure 1 is a side elevation of a machine constructed in accordance with the invention. Fig. 2 is an enlarged sectional detail view taken on the line 2—2 in Fig. 1. Fig. 3 is a top plan view. Fig. 4 is a side elevation partly in section of the machine as seen from the opposite side to that seen in Fig. 1. Fig. 5 is a vertical transverse sectional view taken on the line 5—5 in Fig. 4. Fig. 6 is a vertical transverse sectional view taken on the line 6—6 in Fig. 4. Fig. 7 is a transverse sectional view taken on the line 7—7 in Fig. 4. Fig. 8 is a sectional view taken longitudinally through the drum substantially on the line 8—8 in Fig. 6.

Corresponding parts in the several figures are denoted by like characters of reference.

The frame of the improved machine includes side members 1 having bearings wherein an axle 2 is supported for rotation, said axle carrying a transporting wheel 3 which is provided with earth engaging spurs 4 to prevent slipping. The axle also carries a spur wheel 5 meshing with a pinion 6 on a counter shaft 7 supported for rotation by means of a bracket 8 extending downwardly from one of the side members of the frame. The counter shaft 7 also carries a bevel gear 9 meshing with a bevel pinion 10 on a longitudinal shaft 11. The shaft 11 carries at its forward end a pinion 12 meshing with a pinion 13 on the rear end of the drum carrying shaft 14 to which motion will thus be transmitted. The shafts 11 and 14 are suitably supported for rotation in the frame of the machine. The shaft 14 carries a conical drum 15, the apex of which points in a forward direction, said drum being provided with a plurality of radially extending blades or paddles 16 which, owing to the conical formation of the drum, will project various distances with respect to the axis of the drum carrying shaft, the blades or paddles at the rear end of the drum projecting the farthest. The drum carrying shaft also carries in advance of the drum a hub 17 provided with radially extending earth engaging cutters 18 which may be suitably

curved, as best seen in Fig. 2, so as to engage the soil effectively without danger of breaking.

The frame of the machine includes a downwardly extending bracket 19 with which the scoop 20 is connected by means of a hinge 21 at the rear end of said scoop. The latter is transversely of arcuate shape, being curved concentrically with the drum carrying shaft 10 below which it is supported. The side of the scoop is made relatively high adjacent to the downgoing side of the drum 15, and relatively low or shallow adjacent to the upgoing side of said drum, as best seen in Fig. 2 of the drawings, where the high and low sides of the scoop are designated, respectively, by 22 and 23. The high side constitutes a guard to prevent the proximate side wall of the ditch from caving during the operation of the machine, while the opposite side is made low or shallow in order to enable excavated dirt to be readily thrown over the same and distributed in a thin layer over the surface of the soil. For the purpose of adjusting the scoop and for supporting it at various adjustments, a yoke 24 is provided, said yoke being pivotally connected with the scoop, and said yoke having an upwardly extending screw threaded stem 25 which extends through a longitudinal frame bar or beam 26. A circular nut 27 which is threaded upon the stem 25 and which rests on the upper face of the beam 26 has an annular groove 28 engaged by lugs 29, whereby displacement of the nut with respect to the beam 26 or longitudinally of the axis of the screw threaded stem 25 is prevented. The nut is also provided with a hand wheel 30, whereby it may be rotated for the purpose of effecting vertical adjustment of the stem 25, the yoke 24 and the scoop connected therewith. It will be seen that by this simple mechanism the scoop may be adjusted so as to engage the soil at various angles, thereby enabling more or less dirt to be removed at each operation, as may be found desirable, according to the consistency of the soil and other conditions.

The forward end of the bar 26 which constitutes the draft beam of the machine is supported by means of gage wheels 31 carried by a yoke 32 having an upwardly extending screw threaded stem 33 which extends through the beam 26 and is provided with an annularly grooved nut 34 resting on the top of the beam 26 and retained against longitudinal displacement by means of lugs 35. The nut 34 is provided with a worm gear 36 engaging a worm 37 supported transversely across the frame bar 26 and the shaft of which carries a sprocket pinion 38 which is connected by a chain or link belt 39 with a sprocket pinion 40 on a shaft 41 supported on brackets 42 associated with the handles 43 whereby the machine is

guided and manipulated. The shaft 41 carries a hand wheel 44, whereby it may be rotated for the purpose of transmitting rotary motion to the worm 37, whereby the nut 34 may be rotated for the purpose of effecting adjustment upwardly or downwardly of the stem 33 carrying the gage wheels 31. The latter have been shown as being equipped with circumferential cutting edges 45 that will make longitudinal incisions in the soil in advance of the machine, thereby facilitating the operation of the cutting members and the paddles, and enabling the soil to be easily and effectively pulverized.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The machine may be used either for digging or for cleaning ditches or quarter drains. The gage wheels may be readily adjusted to support the frame and the drum carrying shaft supported thereby at the proper elevation, and the scoop cooperating with the cutters and with the paddles carried by the drum may likewise be easily and quickly adjusted to a desired angle. As the machine advances, the dirt is cut, crushed and pulverized by the joint action of the cutters, the scoop and the paddles, and the fine dirt will be thrown by the paddles over the low side of the scoop and distributed over considerable area without possibility of being banked in any particular location.

The general construction of the machine is simple, and inexpensive. The speed of the drum carrying shaft which also carries the earth engaging cutters may be readily gaged by using transmission gears of proper size, and the improved machine has been found thoroughly efficient for the purposes for which it is provided.

Having thus described the invention, what is claimed as new, is:—

1. In a ditching machine, a shaft supported for rotation with its axis in the line of travel of the machine, earth engaging members connected with the shaft, a hingedly supported earth engaging scoop extending beneath the shaft, and means for adjusting the free end of the scoop.
2. In a ditching machine, a shaft supported for rotation with its axis in the line of travel of the machine, an earth engaging scoop movably supported beneath the shaft and approximately concentric therewith, and earth engaging members carried by the shaft.
3. In a ditching machine, a shaft supported for rotation, a conical drum carried thereby, a plurality of series of earth engaging paddles carried by the drum and extending variously with respect to the axis of the shaft, and a suitably supported scoop

coöperating with the drum and curved approximately concentric with the axis thereof.

4. In a ditching machine, a shaft supported for rotation, earth engaging cutting members and paddles associated with said shaft, a hingedly supported scoop coöperating with the paddles and the cutting members, and means for adjusting the scoop and for supporting it at various adjustments.

10 5. In a ditching machine, a frame structure, a transporting wheel, a longitudinal shaft supported for rotation, a drum carried by said shaft, earth engaging paddles supported on the drum, a scoop hingedly

connected with the frame, and partly surrounding the drum, said scoop having a relatively high side adjacent to the downgoing side of the drum and a relatively low side adjacent to the upgoing side of the drum, and means for transmitting motion from the transporting wheel to the drum carrying shaft. 15 20

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

EDMUND M. FOURNET.

Witnesses:

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SIDNEY E. DELAHOUSAYE.