

No. 645,752.

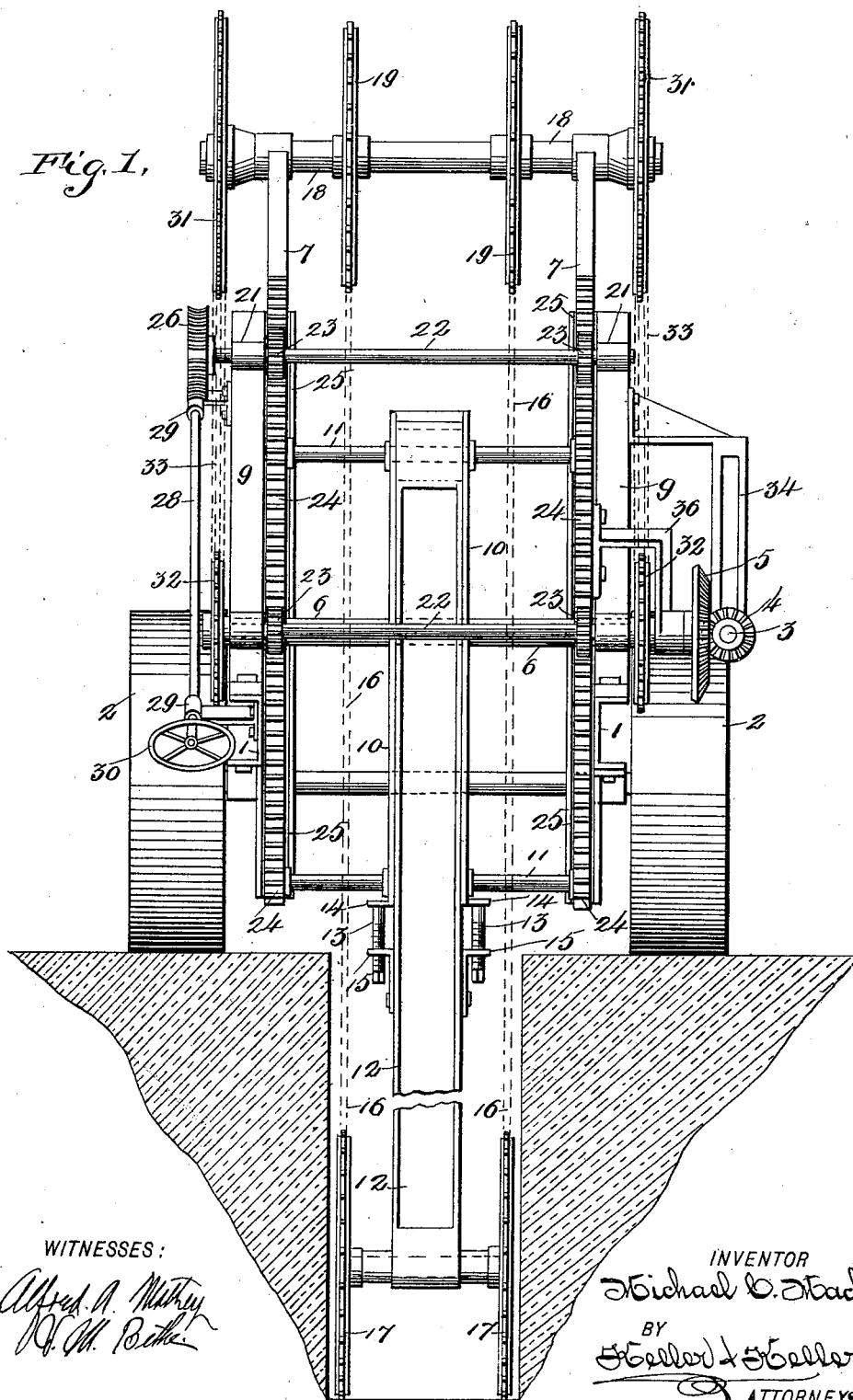
Patented Mar. 20, 1900.

M. C. MACKEY.
DITCHING OR EXCAVATING MACHINE.

(Application filed Aug. 26, 1899.)

(No Model.)

2 Sheets—Sheet 1



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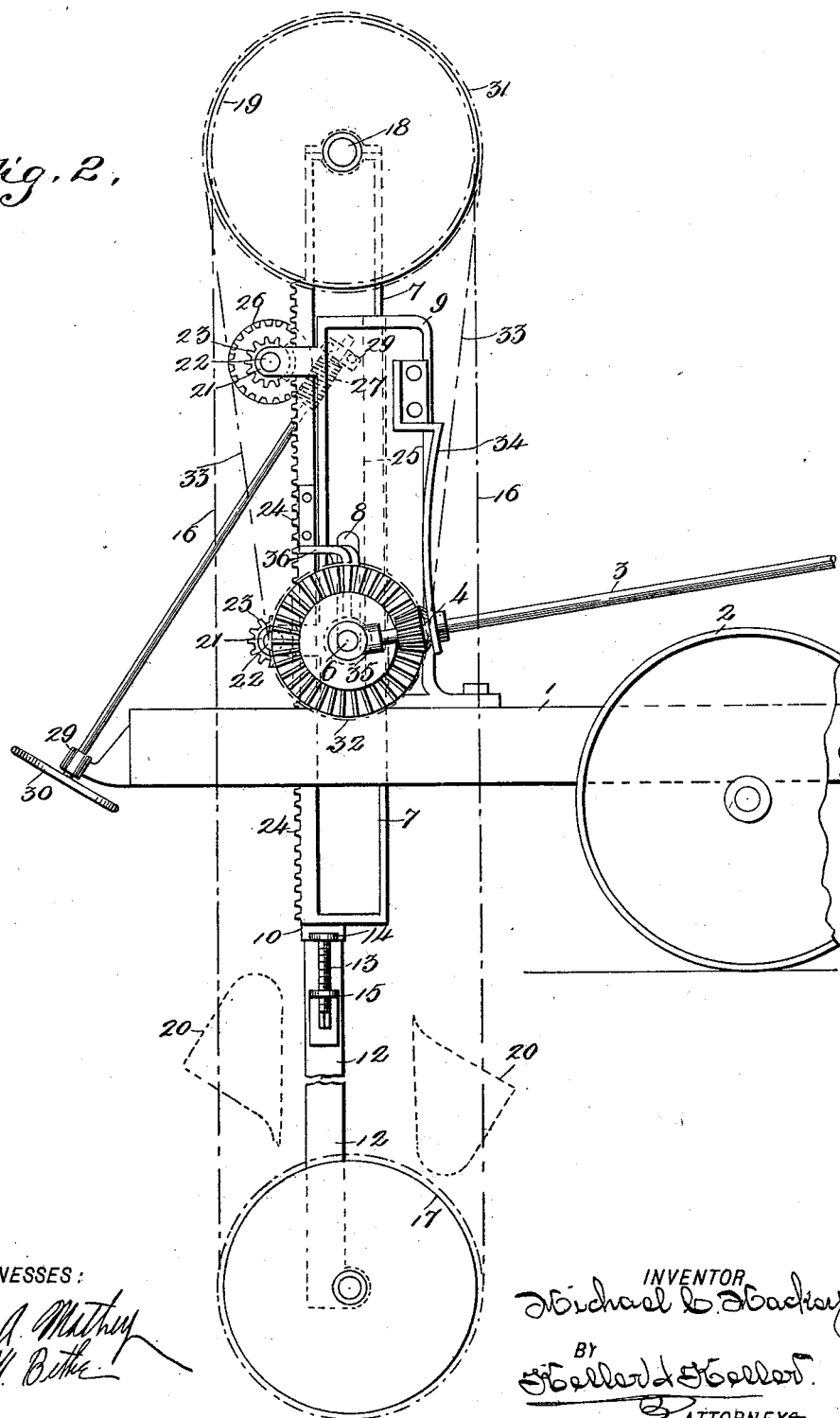
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2 Sheets—Sheet 2.

Fig. 2.



WITNESSES:

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MICHAEL C. MACKEY, OF ST. LOUIS, MISSOURI.

DITCHING OR EXCAVATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 645,752, dated March 20, 1900.

Application filed August 26, 1899. Serial No. 728,602. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL C. MACKEY, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Ditching or Excavating 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.

My invention relates to improvements in ditching or excavating machines; and it consists in the novel combination and arrangement of parts, as will be hereinafter more particularly described and claimed.

In the drawings, Figure 1 is rear elevation of my complete invention as in operation, and Fig. 2 is a side view of the same.

The object of my invention is to construct a practical and durable ditching or excavating machine wherein the conveyer, which consists of a series of traveling buckets, may be adjusted at a suitable elevation during the travel of the machine, whereby an excavation may be made in the ground of a uniform depth notwithstanding the irregularities of the ground over which the machine travels, and whereby piping or other conduits may be laid immediately behind the machine without additional labor in properly shaping and forming the excavation of a uniform depth, as is necessary in all excavating-machines now in use; and it consists of an adjustable carriage which is carried by the frame of the machine, of an endless conveyer consisting of a series of buckets which are adapted to be brought in contact with the ground to be operated upon, means for adjusting said carriage by hand while the machine is in operation, and suitable gearing for imparting motion to said endless conveyer, the details of the several parts of which will be hereinafter more specifically described.

Referring to the drawings, 1 represents a frame, which is mounted upon wheels 2, and, as shown in the drawings, represents the rear end of the machine, the forward end of which may be of any well-known construction and carries an engine (not shown) for imparting motion to the several parts. Leading from the engine above referred to is a power-shaft 3, to which is fixed a bevel-pinion 4, which meshes

with a beveled gear-wheel 5, fixed to one end of a transverse shaft 6, the latter having its bearings in the opposite parallel upper members 7 of the adjustable carriage and passing through slots 8, formed in the upright stationary support 9, forming a rigid part of the frame 1, the latter forming guideways and supports for the adjustable frame hereinafter to be described.

As before stated, the adjustable frame consists of upper members 7, between which is held and supported a vertical guide 10 by rods 11, the said guide adjustably receiving a vertical depending bar 12, the upper end of which is slotted, as shown in dotted lines, Fig. 1, through which passes one of the rods 11, the parts being adjusted in respect to one another by screw-threaded bolts 13, one end of which is removably secured to the angular extensions 14 of said guide 10 and passing through screw-threaded openings formed in the angular plates 15, secured to the bar 12, whereby the endless conveyer may be adjusted, or, more properly, the chain 16, forming a part thereof, in order that the proper tension may be given the latter. Journaled in the lower end of the depending bar are two sprocket-wheels 17, over which the endless chains 16 of the conveyer pass, and fixed to a shaft 18, journaled in the upper ends of the members 7 of the adjustable frame, are two similar sprocket-wheels 19, over which said chains 16 also pass, whereby when the machine is set in motion the buckets 20, carried by said chain, are intermittently brought in contact with the ground to be excavated and elevated, together with the dirt contained in said buckets, to a suitable elevation and delivered to a suitable position remote from the machine, all of which is of the usual construction and somewhat similar to the patent issued to me on the 20th day of October, 1896, No. 569,975, for a similar machine.

Forming an integral part of the upright stationary supports 9 of the machine are two extensions 21, which form bearings for the transverse shafts 22, to which are fixed pinions 23, which mesh with the rack-bars 24, formed on the outer faces of the upper members 7 of the adjustable frame, the lower pair of pinions merely acting as a guide for said members and the upper pair adapted to im-

part motion to the adjustable frame in a substantially-vertical direction by the mechanism hereinafter described, the opposite edge of the said adjustable frame being guided
5 and held in its proper position in respect to the stationary supports 9 by guides 25, forming an integral part of the latter, as clearly shown in Fig. 1.

Secured to one end of the upper shaft 21 is a
10 worm-gear 26, and meshing with the same is a worm-pinion 27, carried by the upper end of an operating-shaft 28, which is mounted in suitable bearings 29, to the lower end of which shaft is fixed a hand-wheel 30, which is
15 located at the rear of the machine, whereby motion is imparted to said shaft, and consequently to the pinions 23, carried thereby, and in turn imparts motion in either direction, as may be desired, to the adjustable
20 frame carrying the endless conveyer, whereby the latter may be adjusted as the machine is in operation and travels along the ground, and consequently an excavation of uniform depth may be made notwithstanding the ir-
25 regularities of the ground over which the machine travels.

Fixed to the ends of the upper shaft 18, carried by the adjustable frame, are two sprocket-wheels 31, and also fixed to the shaft
30 6, on the outside of the supports 9, are similar sprocket-wheels 32, the latter being smaller in dimensions, over which sprocket-wheels two sprocket-chains 33 pass for imparting motion to the endless excavator and conveyer.
35 From the construction and arrangement as above described it will be seen that the power-shaft 3, together with its cooperating parts, must be susceptible to a slight vertical movement, and therefore a guide 34 is se-
40 cured to one of the supports 9, with which the bevel-pinion 4 cooperates, the end of said power-shaft 3 being located in a bearing 35, carried by one end of the shaft 6, which firmly holds the said pinion in its proper position in
45 respect to the bevel-gear 5 notwithstanding the direction in which the adjustable frame is moved, and secured to the latter is a bracket 36, the lower end of which forms a bearing through which the shaft 6 also passes
50 in order to properly hold and support the latter, and also formed in the supports 9 are slots 8, which allow for the adjustment or movement of the adjustable frame and parts accompanying the same when the hand-wheel
55 30 is turned in either direction for regulating the endless conveyer at its proper depth within the ground.

I do not limit myself to the precise construction and arrangement of parts herein
60 shown and described, as the same may be varied in many respects without departing from the nature of my invention; nor do I limit myself to any particular construction of endless excavator and conveyer, as many
65 forms may be used with success, the principal

object being to construct and devise an adjustable frame which may be raised and lowered in a substantially vertical position by suitable devices, the said frame carrying the
70 endless conveyer and excavator whereby an excavation may be made in the ground of uniform depth and size notwithstanding the irregularities of the ground over which the machine passes.

In the present machine the dirt excavated
75 is elevated and deposited in the rear of the machine, from which position it may be directed and deposited to any suitable position remote from the machine.

Having fully described my invention, what
80 I claim is—

1. An excavating-machine, comprising a suitable frame, an adjustable carriage guided by the latter, in a substantially-vertical position, shafts carried by the upper and lower
85 ends of said carriage, sprocket-wheels fixed to said shafts, an endless conveyer and excavator passing over said sprocket-wheels, sprocket-wheels also fixed to the opposite ends of the upper shaft, a suitable power-shaft,
90 sprocket-wheels fixed to the latter, sprocket-chains passing over the last-named sprocket-wheels, and the sprocket-wheel fixed to the ends of the upper shaft of said carriage,
95 means for imparting motion to said power-shaft, and suitable mechanism for adjusting the carriage in respect to the frame of the machine, as and for the purpose described.

2. An excavating-machine, comprising a suitable frame, supports forming suitable
100 guideways, a suitable carriage comprising parallel members, the upper ends of which are provided with suitable bearings, a shaft journaled in said bearings, sprocket-wheels fixed to said shaft, a guide carried by said
105 parallel members of the carriage, a bar adjustably secured within said guide, the lower end of which is provided with suitable bearings, a shaft journaled in the latter, sprocket-wheels fixed to said shaft, an endless conveyer
110 and excavator passing over said sprocket-wheels, suitable means for imparting motion to the upper shaft, a rack-bar formed on the said vertical parallel members of the carriage, shafts mounted in said supports, pin-
115 ions fixed to said shafts, and meshing with said rack-bars, a worm-gear secured to one end of the upper shaft, an operating-shaft mounted in suitable bearings, a worm-pinion fixed to said operating-shaft, and meshing
120 with said worm-gear, and means for imparting motion to said operating-shaft, as and for the purpose described.

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

MICHAEL C. MACKEY.

Witnesses:

ALFRED A. MATHEY,
C. F. KELLER.