

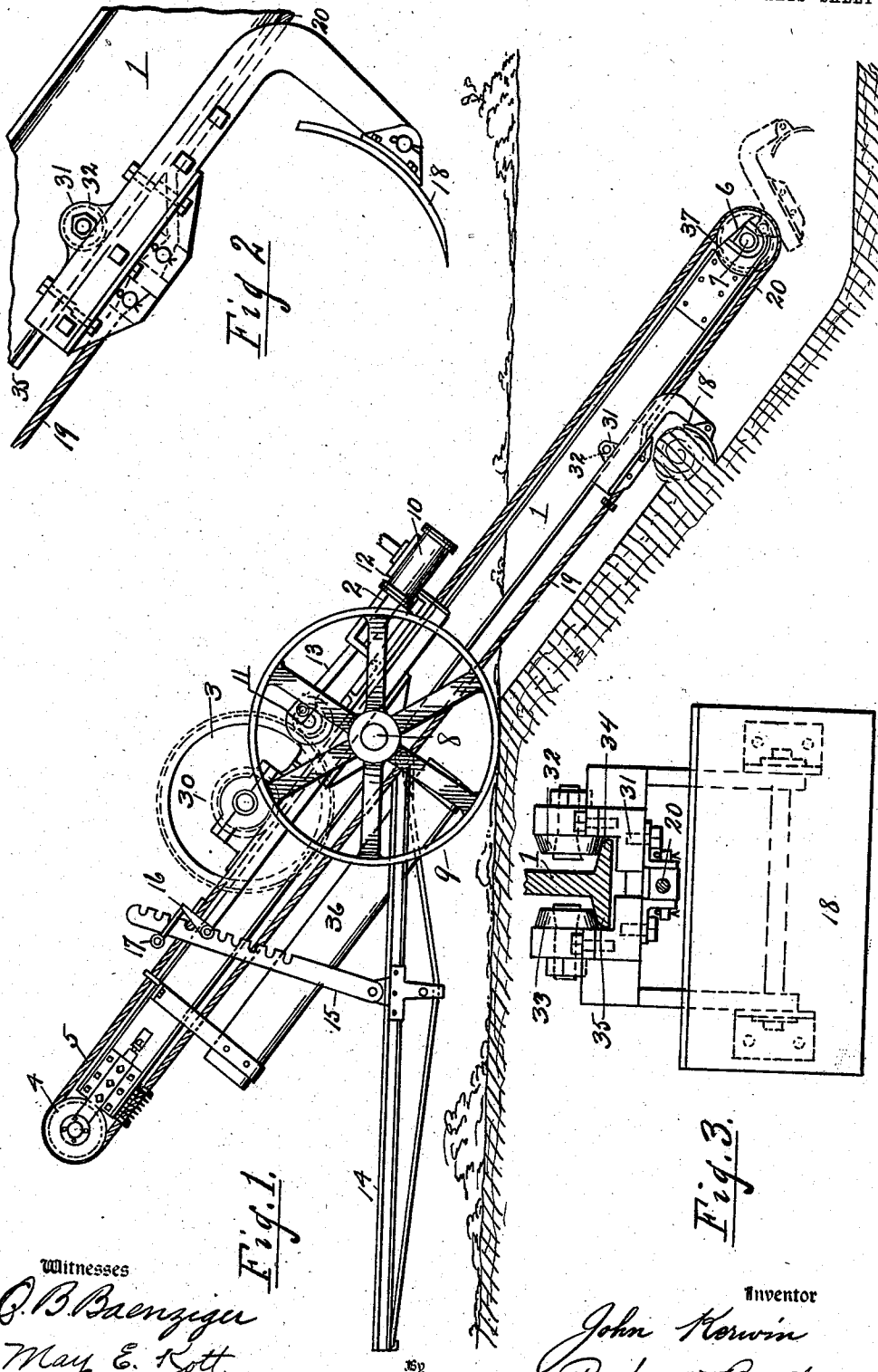
No. 884,932.

J. KERWIN.
EXCAVATOR.

PATENTED APR. 14, 1908.

APPLICATION FILED AUG. 16, 1907.

3 SHEETS—SHEET 1.



Witnesses
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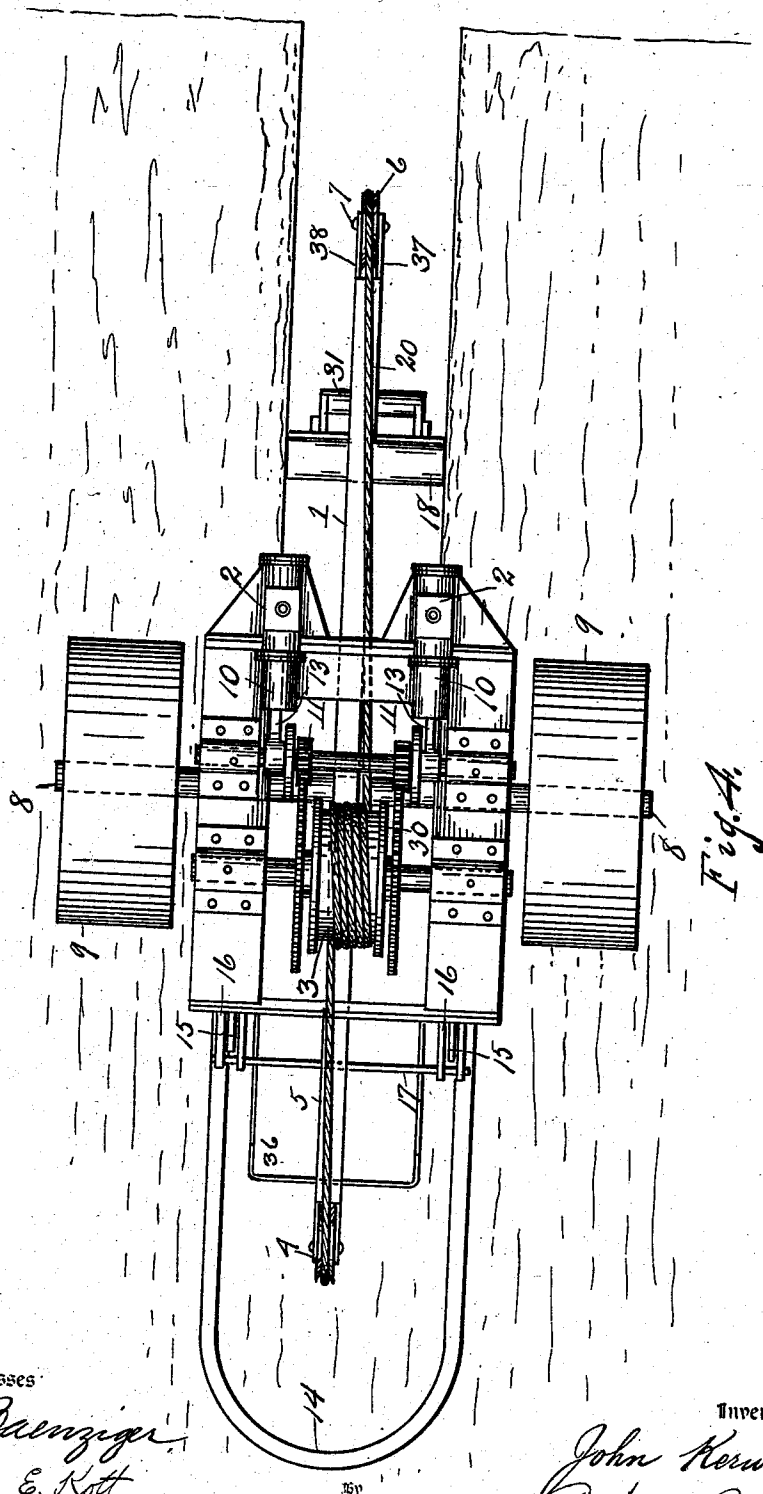
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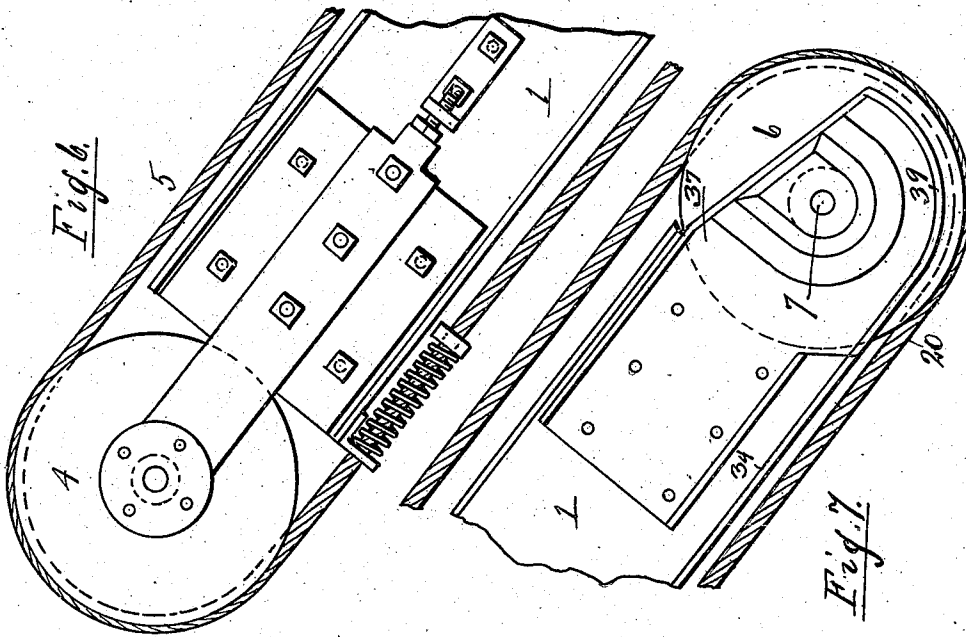
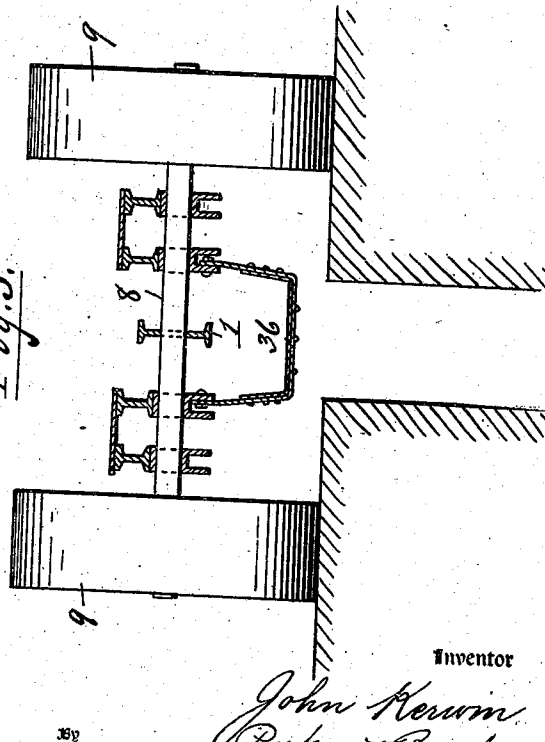


Fig. 8.



Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN KERWIN, OF DETROIT, MICHIGAN.

EXCAVATOR.

No. 884,932.

Specification of Letters Patent.

Patented April 14, 1908.

Application filed August 16, 1907. Serial No. 388,828.

To all whom it may concern:

Be it known that I, JOHN KERWIN, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Excavators, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to excavators; it has for its object an improved ditch digging machine.

In the drawings:—Figure 1, is a side elevation. Fig. 2, is an enlarged detail of the scraper. Fig. 3, is an enlarged detail across the frame of the scraper. Fig. 4, is a plan view. Fig. 5, is a section lengthwise the axle. Fig. 6, is a detail of the upper sheave. Fig. 7, is a detail of the lower sheave of the frame. Fig. 8, is a detail of the stirrup which supports the above ground soil guide.

The excavator consists essentially of a balanced beam 1, and balanced engines 2 and winding drum 3. The balanced beam 1, is a long heavy beam, preferably of metal, carrying at its upper end a sheave 4, which is supported in bearings that may be adjusted to produce any desired tension on the cable 5, which runs over the sheave 4. At the lower end is a similar sheave 6 carried in bearings 7 which are supported by plates 37, 38, which project beyond the end of the beam 1. The beam 1 is mounted on an axle 8, and the axle is supported on truck wheels 9. Over the axle and in balanced relation are driving engines 10 and a drum wheel 3, which drum wheel is actuated by the engines through the intermediate driving wheel 11, suitably mounted on the same framework which supports the engine and drum, and connected by a crank to the piston stem 13 of the engine.

A draft rigging 14 extends forward from the axle and is intended to be used for the purpose of drawing the entire excavator, which for the purpose of transportation is attached or coupled to any suitable traction apparatus, preferably one which is capable of producing steam for the actuation of steam engine 10, although the engine 10 may be any suitable motor.

From the draft rigging 14 rises a notched bar 15 provided with a series of notches in one of which engages a pin 16, that lies across

or at right angles to the main bar 1; preferably there are a pair of notched bars 15, one at each side of the excavator, and these bars are held in the position of adjustment with respect to the main beam by a coupling yoke 17 that passes from some suitable part of the framework around the notched bar. As the beam 1 is mounted on the central axle 8, and as the draft rigging 14 is at all times, whether the device is in use or being transported, maintained in a substantially horizontal position, the angle and consequently the depth to which the lower end of the beam (that carrying the sheave 6) may be lowered, is regulated by the height along the notched bar 15 at which the pin 16 is caused to engage it.

The excavation is done by a traveling scraper 18, to which are affixed the ends of a pair of cables 19 and 20; both cables wind in reverse direction on the drum 30. The one cable winds as the other cable unwinds and the drum is actuated in either direction by the engine 10. As the cable 19 winds on the drum the scraper 18 is drawn towards the sheave 4, and as the cable 20 winds on the drum 30, the cable 19 unwinds at the same time from the drum.

The scraper is carried on a carriage 31, with antifriction wheels 32 and 33, running against the upper surface of the lower flanges 34 and 35, of the beam 1. The plates 37 and 38 are each furnished with flanges concentric with the axle of sheave 6; these flanges 39, 40 form a track which is in continuation of the track formed by flanges 34, and 35; the carriage of the scraper can thus be drawn partly around the sheave, until the scraper clears the bottom of the trench under construction, and the excavation may thus be carried to a uniform depth, avoiding the tendency which excavators of the elevator type have to "climb".

From the lower side of the beam 1, on the upper reach of the beam, (the part which is always above the surface of the ground), hangs a guide 36, through which the scraper travels, in that part of its course which is above the surface of the ground.

When the scraper is drawn down toward the sheave 6, the beam is set by means of the notched bar 15 and pin 16 to such an inclination as is most advantageous for the working. The dirt carried in front of the scraper is forced into the guide 36 and dropped from the top of it into any vehicle convenient for removing it.

The means for conveying the motive fluid is not shown in this drawing, as they form no part of the invention, and the character of this means will depend upon the character of the fuel used, which may be either steam, electricity, or compressed air.

The truck wheels 9 rest on the surface of the ground at the sides of the ditch while the mechanism for doing the actual digging is so evenly balanced on the axle that the inclination of the beam 1 may be anywhere between nearly vertical and nearly horizontal, and when in transportation, not digging, the beam is carried almost exactly horizontal.

The balanced arrangement of the parts make it possible to make the ditch digging appliance very long, and the ditch which may be dug with it very deep.

What I claim is:—

1. An excavator, having in combination a single supporting axle and truck wheels carrying the same, a beam balanced on said axle transversely thereof, earth-removing means supported by said beam and adapted to travel therealong, a draft rigger adapted to be held in substantially horizontal position with respect to the surface of the ground, and adjustable means whereby the degree of angularity of the beam with respect to the surface of the ground may be regulated, substantially as described.

2. An excavator, having in combination a truck and axle, a draft attachment adapted to be maintained in uniformly horizontal position, a beam balanced on said axle, scrap-

ing means carried on said beam, actuating means therefor supported on said truck, and means supported by said draft attachment whereby the angularity of said beam with respect thereto and to the surface of the ground may be controlled, substantially as described.

3. In an excavating device, in combination with a truck, an axle, a balanced beam carried thereby, a scraping appliance connected with said balanced beam, a balanced motor adapted to swing with said beam and to actuate the scraping appliance, substantially as described.

4. In an excavator, in combination with a truck, an axle, means for drawing said truck, a balanced scraper guiding beam, a scraper carried by said balanced beam, a motor also carried by said balanced beam, and means connected with said motor for actuating said scraper, and means for holding the balanced beam in an assumed position, substantially as described.

5. In an excavator, in combination with a truck and axle, a beam balanced thereon provided with guiding flanges, a scraper carriage running on a flange of said beam, means for actuating said scraper carriage, said actuating means being in balanced relation with said beam, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

JOHN KERWIN.

Witnesses:

CHARLES F. BURTON,
WILLIAM M. SWAN.