



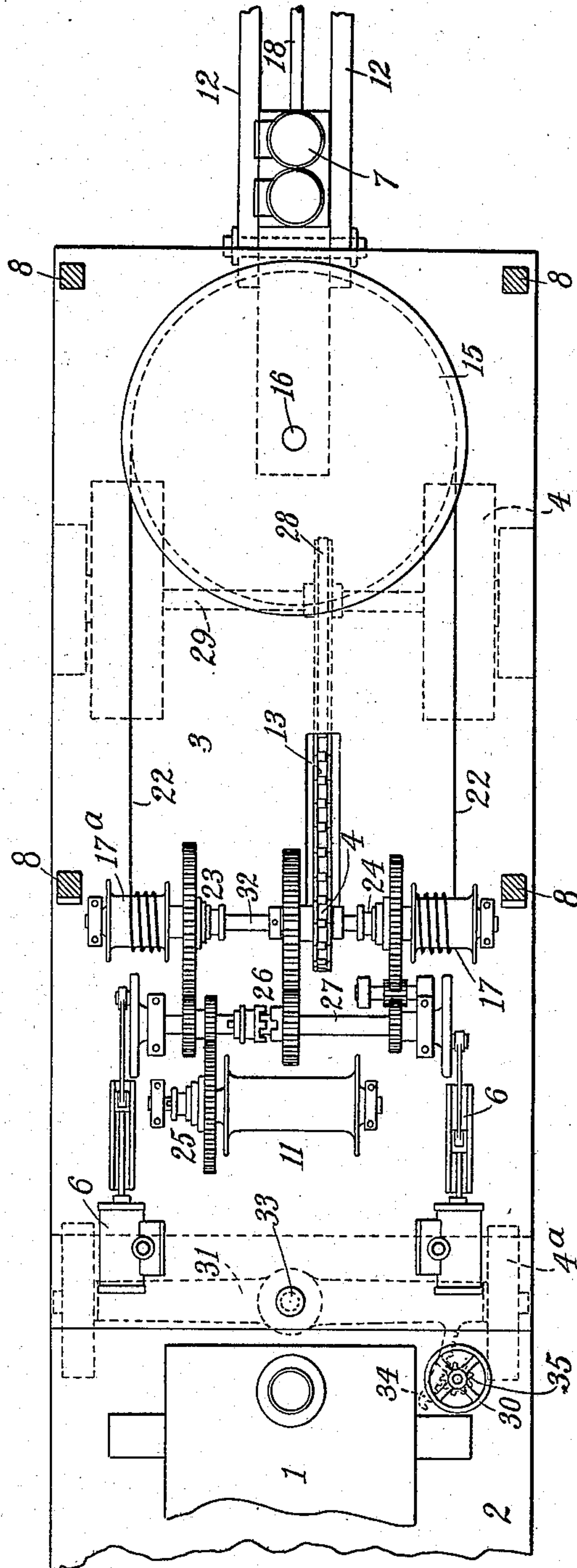
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EARTH EXCAVATOR.  
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911,131.

Patented Feb. 2, 1909.

2 SHEETS—SHEET 2.

Fig. 3



Witnesses.  
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# UNITED STATES PATENT OFFICE.

HORACE WILLIAM KING, OF ECHO, OREGON.

## EARTH-EXCAVATOR.

No. 911,131.

Specification of Letters Patent.

Patented Feb. 2, 1909.

Application filed March 20, 1908. Serial No. 422,369.

*To all whom it may concern:*

Be it known that I, HORACE WILLIAM KING, a citizen of the United States, and a resident of Echo, in the county of Umatilla and State of Oregon, have invented certain new and useful Improvements in Earth-Excavators, of which the following is a specification.

This invention has for its object the production of an earth excavating machine adapted for use in removing earth from a cut or other excavation, and depositing it alongside of the cut or excavation which is being made.

An excavator embodying my invention embraces in general terms a swinging arm carrying at its forward end a rotary excavating wheel placed at right angles to this arm which has both a horizontal and vertical motion by means of a joint and a shaft whereby the excavating wheel can be oriented laterally or raised and lowered, said wheel being propelled by an engine mounted on said carrying arm.

The machine is mounted on a platform supported by six wheels carrying a boiler and a donkey engine which furnishes propulsive power to move the whole machine by means of a chain attached to the axle of the front pair of wheels and also supplies power to give the swinging arm motion in either a horizontal or vertical direction, as may be desired, as will be fully explained hereafter.

As shown in the drawings;—Figure 1 is a side elevatoin of the machine embodying my invention. Fig. 2 is a front end view of the excavating wheel. Fig. 3 is a plan view of the machine.

As shown in Fig. 1—1 designates the boiler mounted on the platform 2 supported by the wheels 4, 4<sup>a</sup>, 4, said platform being jointed above the middle pair of wheels. 5, 5, 5 designate steampipe conducting steam from boiler 1 to engines 6 and 7. 8, 8 is a frame with four legs carrying a pulley 9 over which passes a cable 10 running back to a drum 11, which is attached by a system of gears to the donkey engine 6, by means of which the shaft 12 can be given a vertical motion. The machine is propelled by the attachment of the cog chain 13 to the front pair of wheels 4, said cog chain running from the axle of front pair of wheels to a cog wheel 14, which is connected by a shaft to donkey engine 6. 15 is the bull wheel around which passes a cable 22 attached to drums to be

seen in Fig. 3 connected with the donkey engine 6 by means of which a horizontal motion can be given to the swinging arm 12. Said swinging arm is rigidly attached to the lower end of a vertical shaft 16 passing through the platform 3 to the top of which shaft is attached the bull wheel 15, said shaft being of sufficient strength to support the arm and excavating wheel. The swinging arm consists of two sections 12<sup>a</sup> and 12<sup>b</sup> working on a swivel joint 12<sup>b</sup> by means of which the part 12 of the swinging arm can be raised or lowered by cable 10 passing over pulley 9 to drum which is attached to engine 6 as hereafter described. Swinging arm 12 carries inside a revolving shaft 18 attached to the excavating wheel 20 by any suitable means, said shaft 18 being also connected to the crank shaft 19 of engine 7 which furnishes power to drive the wheel 20.

Fig. 2 shows the front end view of the excavating wheel 20 of Fig. 1. This wheel consists of a plurality of steel blades of sufficient strength projecting from a hub attached to the revolving shaft 18 of Fig. 1. These blades are suitably braced by means of sectors 19 of iron, steel or other suitable metal, so constructed as to fill a portion of the space adjacent to the hub between two blades, said blades projecting beyond said sectors a suitable distance as shown. These sectors 19 are fastened rigidly to the blades by means of suitable flanges upon these sectors substantially as shown in drawing Fig. 2. The wheel being given a sufficiently swift rotary motion the plates 20<sup>a</sup> carry the earth and throwing it off at point 21, deposit it alongside the cut or excavation.

Fig. 3 representing a plan view of the machine shows the means by which the donkey engine 6 of Fig. 1 furnishes the power to give horizontal and vertical direction to the shaft 12<sup>a</sup>, 12 of Fig. 1 and also shows how the platform is guided. Bull wheel 15 attached to top of shaft 16 carries cable 22 which runs to drums 17 and 17<sup>a</sup>. These drums 17 and 17<sup>a</sup> are loosely attached to shaft 32. By means of clutch 23 drum 17<sup>a</sup> may be thrown in and connected with engine 6. By means of cable 22 winding up on drum 17<sup>a</sup> and unwinding from drum 17 at the same time, swinging arm 12 may be moved to the left. By reversing the process and throwing drum 17 in gear on shaft 32 by means of clutch 24 cable 22 may be wound up on 17 and unwound on 17<sup>a</sup> and swinging



arm 12 may be moved to the right. Drum 11 may be thrown in gear by clutch 25 and connected with engine 6. Cable 10 of Fig. 1 passing from carrying arm 12 over upright frame 8, 8 to drum 11 and winding up on said drum lifts or lowers swinging arm 12 as may be desired. 26 is a clutch attached to shaft 27. 13 is a cog chain passing over cog wheel 4 upon axle 32 and cog wheel 28 upon axle 29. By means of clutch 26 this mechanism 4, 28, 13 may be set in motion for the purpose of moving the whole machine when desired. 12 represents a broken section of the carrying arm and 18 is a section of the inclosed shaft. 7 is the engine by which shaft 18 is rotated.

The platforms as described above are jointed at the middle pair of wheels 4<sup>a</sup>, the front end of the rear platform 2 carrying the rear of the forward platform 3.

33 is a king pin bolt allowing free movement of the platforms 2 and 3.

30 is a steering wheel attached to the axle 31 of the middle pair of wheels 4<sup>a</sup> by means of a gear attachment consisting of a toothed sector 34 attached to the axle 31 and a gear 35 on the shaft of the steering wheel 30, substantially as shown.

This machine is particularly adapted for use where there is no necessity of removing the dirt from the sides of the cut or excavation and where rapid cutting is desirable in soil free from large rock.

Having described my invention what I claim and desire to secure by Letters Patent, is,—

1. The combination with a wheeled frame or platform of a swinging arm, a rotary cutting device carried by the free end of said arm, a pivot allowing the arm to move horizontally, a pivot allowing the arm to move vertically and an engine carried on vertically moving section of said arm to operate said cutting device, substantially as shown.

2. The combination with a wheeled frame or platform of a swinging arm, a rotary cutting device carried by the free end of said

arm, a pivot allowing the arm to swing horizontally, a pivot allowing the arm to swing vertically, an engine carried on the vertically moving section of said arm an upright frame carrying a cable attached to said swinging arm by means of which a vertical motion can be given to said swinging arm, substantially as shown.

3. The combination with a wheeled frame or platform of a swinging arm, a rotary cutting device carried at the free end of said arm, an engine carried on said arm connected by eccentrics to a shaft running through the vertically moving section of said arm and attached to the said cutting device, substantially as shown.

4. The combination with a wheeled frame or platform of a swinging arm, a cutting device or rotary wheel carried at the free end of said arm, said device being attached to the swinging arm at right angles to the end thereof by means of a shaft capable of revolving within said arm which arm remains stationary, substantially as shown.

5. The combination with a wheeled frame or platform of a swinging arm, a rotary wheel cutting device attached to said arm, said wheel being capable of rotation in a plane at right angles to said arm, a pivot allowing said arm to swing horizontally, a pivot allowing said arm to swing vertically, a cable carried by an upright frame by means of which said arm can be raised or lowered, a bull wheel and cables by means of which said arm may be moved horizontally, an engine carried on said swinging arm, attached by eccentrics to a shaft by means of which said rotary wheel may be rotated about its axis, said axis being coincident with axis of said shaft, substantially as shown.

Signed at Echo in the county of Umatilla and State of Oregon this 26th day of October A. D. 1907.

HORACE WILLIAM KING.

Witnesses:

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