

No. 825,658.

PATENTED JULY 10, 1906.

C. KERR.
EXCAVATING MACHINE.
APPLICATION FILED NOV. 15, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

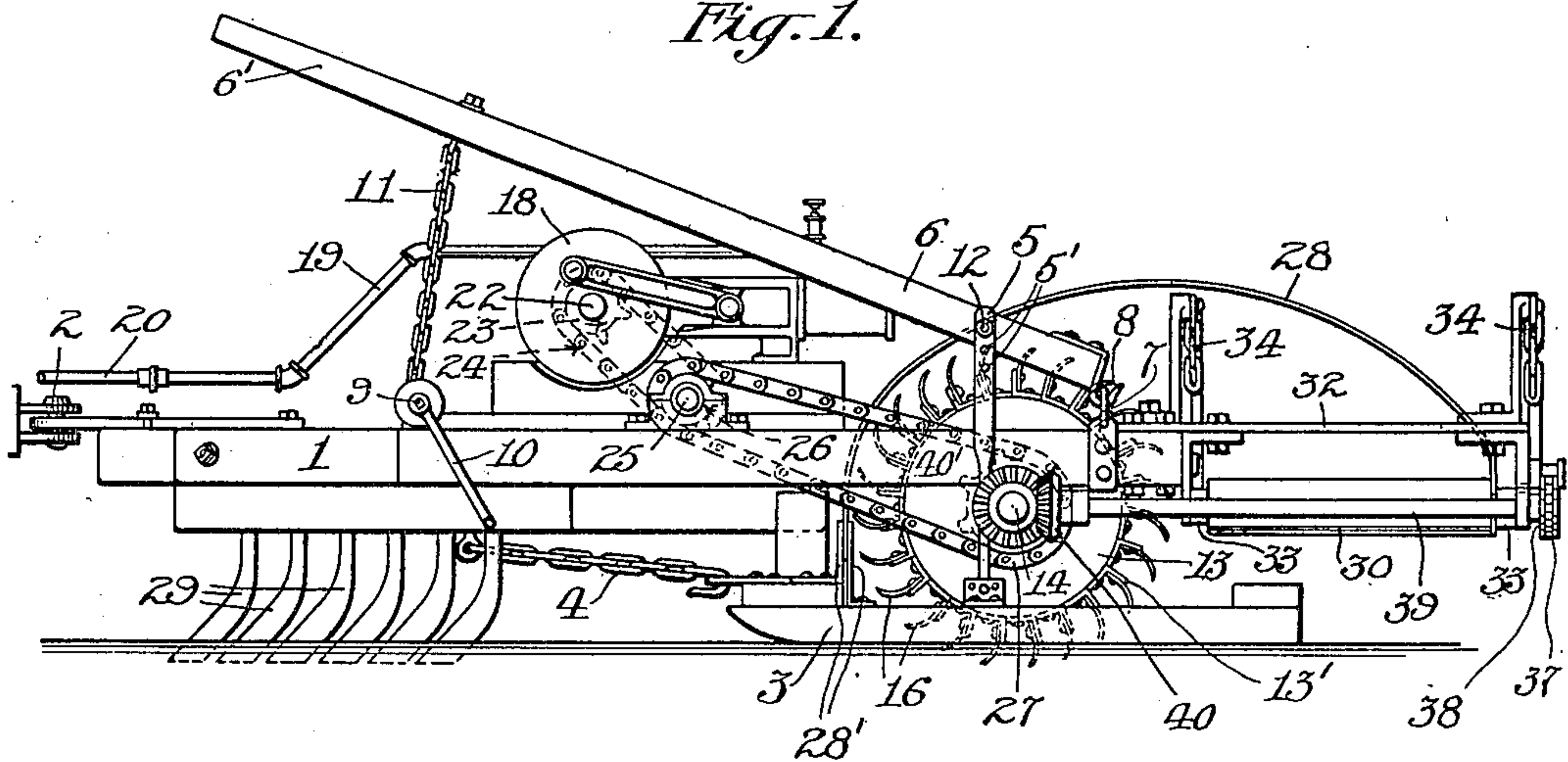
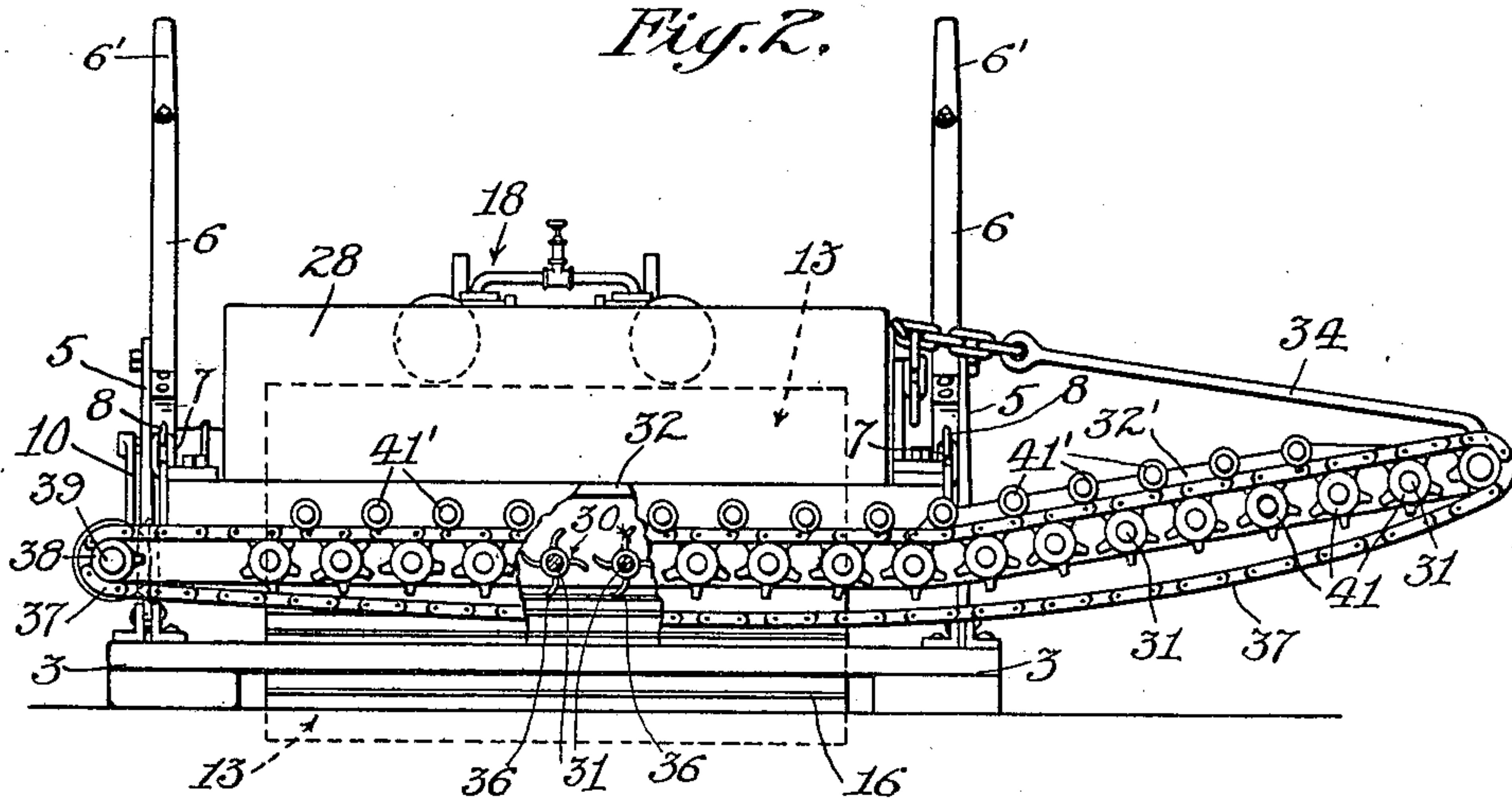


Fig. 2.



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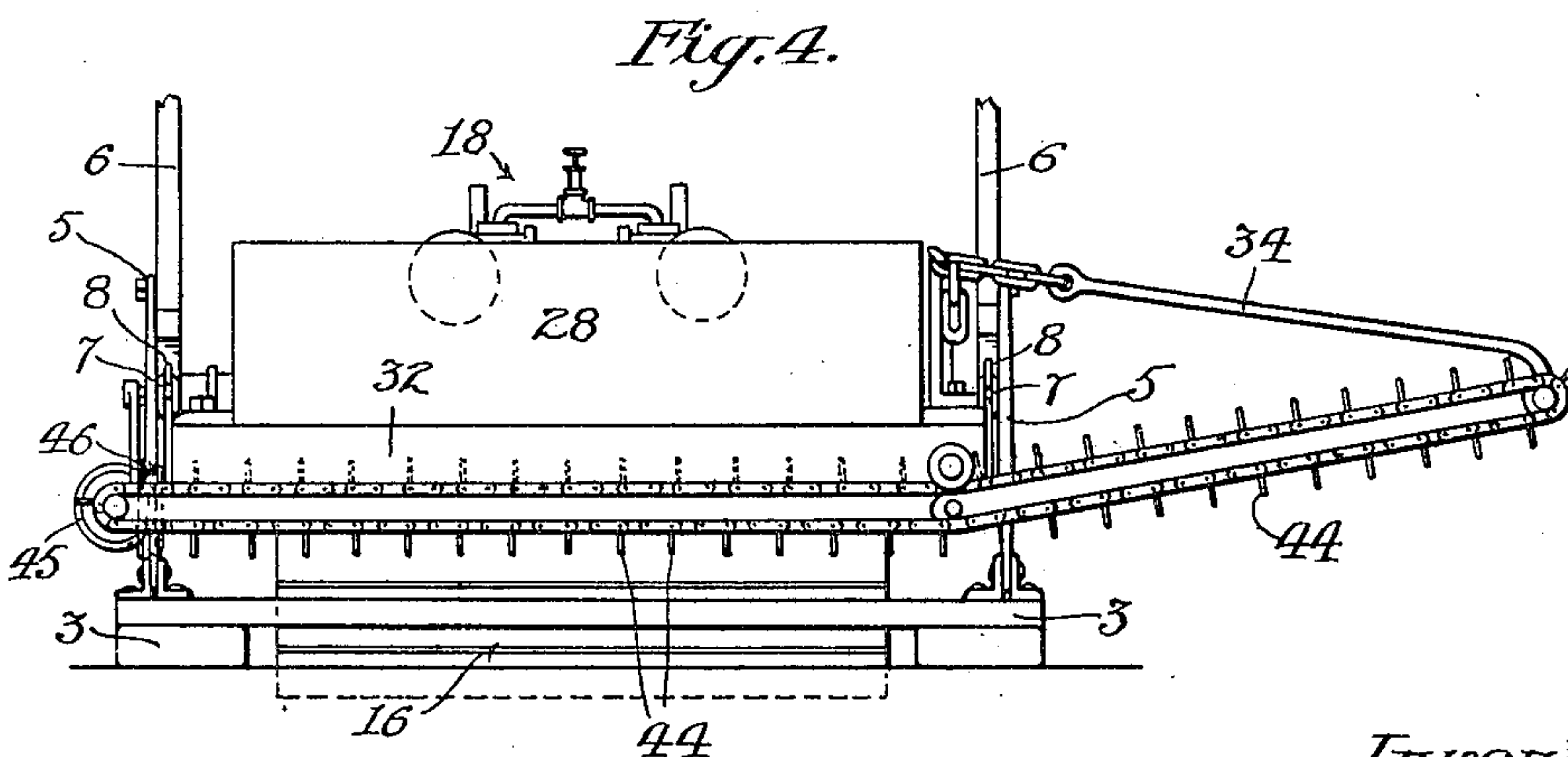
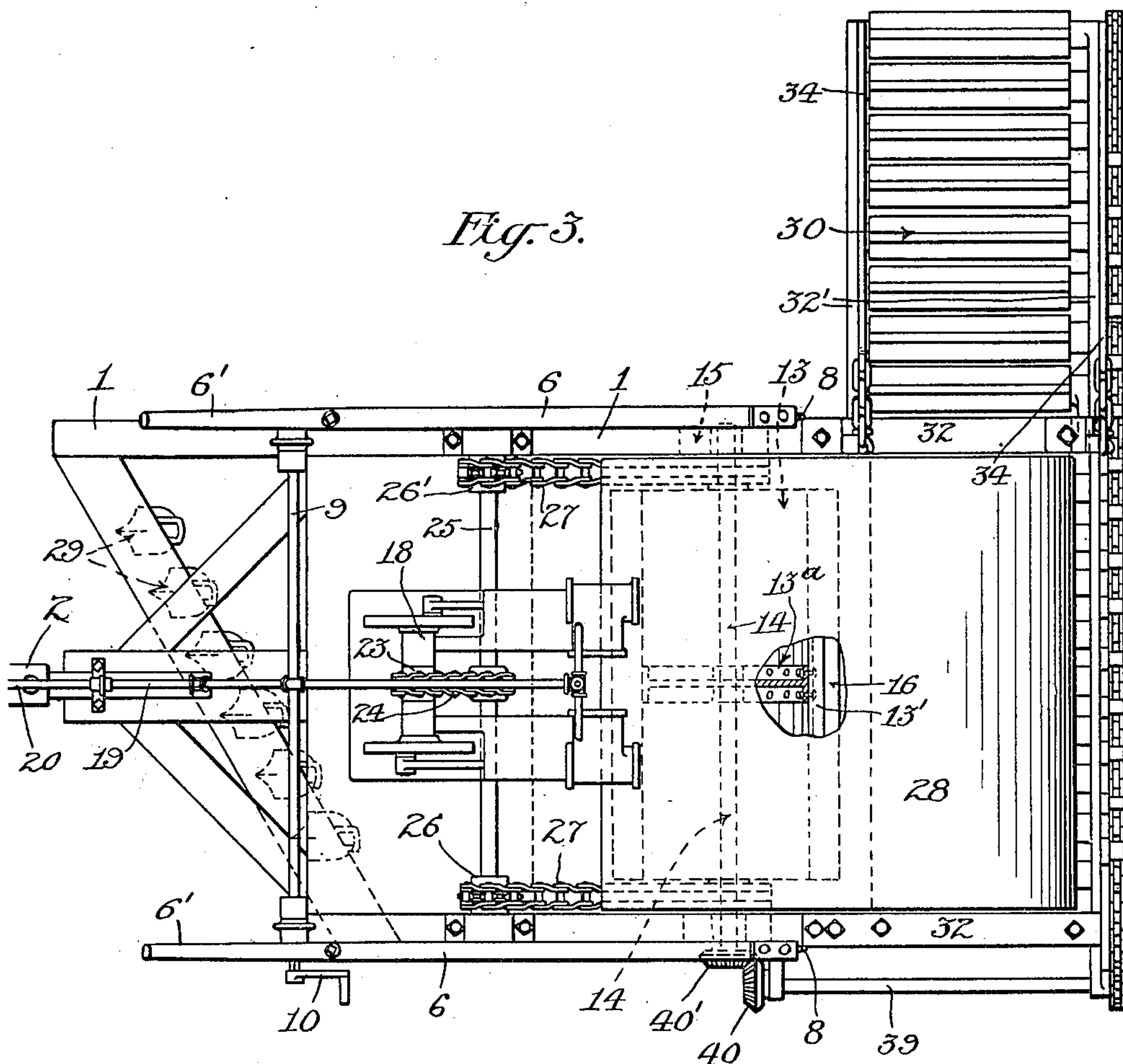
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UNITED STATES PATENT OFFICE.

CHARLES KERR, OF TEHACHAPI, CALIFORNIA.

EXCAVATING-MACHINE.

No. 825,658.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed November 15, 1905. Serial No. 287,385.

To all whom it may concern:

Be it known that I, CHARLES KERR, a citizen of the United States, residing at Tehachapi, in the county of Kern, State of California, have invented a new and useful Excavating-Machine, of which the following is a specification.

The main object of the invention is to provide an excavating-machine adapted to be operated in connection with a traction-engine or other traction means and to continuously excavate a channel or ditch.

A further object of the invention is to provide a machine of this character which is capable of use as a plow.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation. Fig. 2 is a rear elevation. Fig. 3 is a plan. Fig. 4 is a rear elevation showing a different form of the lateral conveyer.

1 designates the frame of the machine, which at its forward end is provided with coupling or draft means (indicated at 2) for attachment to traction means, such as a traction-engine. (Not shown.) Said frame 1 carries the various working parts of the machine, and means are provided for adjusting the height of said frame to vary or control the depth of cut or excavation. For this purpose a sled, frame, or truck 3 is connected at its forward end to the forward portion of frame 1 by means of traction means consisting of a chain 4, having loose or pivotal connections with the said frame and sled or truck, and arms 5 are pivoted at their lower ends on said sled or truck and at their upper ends to bars or beams 6, from the rear ends of which the rear end of the frame 1 is suspended by links 7 engaging hooks 8 on said beams. By drawing down the forward ends of said beams the rear end of frame 1 can be elevated, and a shaft 9, journaled in bearings on said frame 1 and having a crank-handle 10, is connected by chains 11 with said beams to enable the beams to be drawn down for this purpose. The forward ends of said beams are formed as handles 6' to facilitate manual operation or control thereof. Arms or bars 5 have a series of holes 5' to receive the fastening pins or bolts 12 for the beams 6 and enable variation of the height of said bolts.

An excavating drum or device 13 is mounted by its shaft 14 in bearings 15 on the frame 1 and carries a series or plurality of blades or scrapers 16, which are inclined and curved

forwardly in the direction of rotation, this direction being such that the lower portion of the drum travels forwardly in the direction of movement of the machine. Such motion of the excavating-drum is effected by an engine (indicated at 18) mounted on the frame 1 and supplied with steam through a pipe 19 from the boiler of the traction-engine through a suitable flexible coupling, (indicated at 20.) The main shaft 22 of the engine is connected by sprocket-wheel and chain devices 23 24 to a shaft 25, which is connected by sprocket-wheels 26 26' and chains 27 to the shaft 14 of the excavating-drum.

A hood or shell 28 extends over and forwardly of the excavating-drum 13 and is attached to the frame 1, so as to move up and down with the drum, the lower edge of this hood or shell extending down between two strips or plates 28' on the top of the sled or truck 3, so as to travel therebetween in the up-and-down movement of the frame relatively to the truck and maintain a shield or closure for the front of the excavating-drum.

The apparatus as above described is capable of use as a plow under certain conditions, the machine being drawn forward by the traction-engine and the excavating-drum 13 being rotated by the engine 18 in such manner as to cause the blades 16 to cut into the ground and carry the ground upwardly over the drum and drop it back onto the ground, this operation serving not only to plow the ground, but to more or less pulverize the same. A series or gang of plows or bull-noses 29 is, however, provided for use in harder ground to break the soil preliminary to the operation of the excavator.

In conjunction with the above-described apparatus means are preferably provided for carrying away the excavated material to one side. Said means may consist of a special form of conveyer, (shown in Figs. 1 to 3,) the same comprising a plurality of rotary conveyer devices 30, mounted on parallel shafts 31, extending in a series at the rear of the machine in a plane transverse to the plane of rotation of the excavating-drum. Directly at the rear of the excavating-drum 13 a frame 32 is mounted on the frame 1 and carries bearings 33 for the said rotary devices, and an extension 32', preferably pivoted to the frame 32 and adjustably supported by suspending or adjusting means 34, carries additional series of rotary conveyer devices 30. Each of the conveyer devices 30 consists of a

shaft or drum 31, with wings or blades 36 extending therefrom—for example, in radial direction. A chain 37, running over a sprocket 38 on a counter-shaft 39, driven by bevel-gear 40 from the driving-shaft 25, runs over a series of sprocket-wheels 41 on the respective shafts 31 of the rotary devices 30 to drive said rotary devices in the same direction. Idlers 41' may be provided to maintain effective engagement of the sprocket means.

The hood or shell preferably extends over the lateral conveyer means as well as over the excavator, so as to confine and direct the discharge from the excavator onto the conveyer.

In operation the machine is drawn forward by the traction-engine, and the auxiliary engine 18 operates the excavating-drum, as aforesaid, to dig out the ground and carry it over the drum, discharging it over the top in a continuous stream, passing tangentially therefrom by centrifugal force. The effect of gravity and the forward bend or curve of the blades and the hood 28 hold the dirt on the excavator until the blade passes the top of the excavator, whence it is then run onto the lateral conveyer, the hood serving to guide the dirt onto the conveyer. Rotary devices 30 are located in the path of this discharge and, receiving the same, carry it laterally, each of the rotary devices throwing the dirt over and onto the next rotary device and passing it successively from one to the other until the end of one of the series is reached, which discharges the dirt on the ground.

The invention may be variously modified. For example, other forms of lateral conveyer may be used, such as a belt conveyer, (shown at 44 in Fig. 4,) the same being driven by gears 45 46 from the driving-shaft 25, aforesaid, and serving to receive the discharge from the excavating cylinder or drum 13 and to carry it to one side, as required.

The drum 13 may be formed of a plurality of angle-irons 13', bolted to wheels 13^a by one arm of each iron and having the blades 16 bolted thereto.

What I claim is—

1. The combination of a frame provided with traction means, a rotary excavator mounted on said frame and having blades rigidly secured thereon and extending therefrom forwardly in the direction of rotation, means for driving said excavator at a speed sufficient to throw the material therefrom by centrifugal action at the top of the exca-

vator, a lateral conveyer arranged in the path of said discharge for carrying away the discharge from one side of the machine, and a hood extending from the rotary excavator and the lateral conveyer to guide the earth from the excavator to the conveyer.

2. The combination of a frame provided with traction means, a rotary excavator mounted on said frame, an engine mounted on the frame and connected to drive said excavator, said excavator having blades extending forwardly therefrom in the direction of rotation, and a lateral conveyer arranged in the path of the discharge from said rotary excavator for carrying away the discharge to one side of the machine, said conveyer comprising a plurality of rotary devices, each provided with blades for transferring the material to the next successive rotary conveying device, and means for driving said rotary devices.

3. The combination of a frame having traction means, a rotary excavator mounted on said frame and having outwardly and forwardly extending blades rigidly secured thereto, means for rotating said excavator, a supporting-frame adapted to run on the ground, arms pivotally mounted on said supporting-frame, beams pivoted to said arms and to the traction-frame, and adjustable means connecting said beam with the traction-frame to raise or lower said frame with respect to the supporting-frame, and vertically-yielding traction means connecting said traction-frame with the supporting-frame.

4. The combination of a frame having traction means, a rotary excavator mounted on said frame, means for rotating said excavator, a supporting-frame adapted to run on the ground, means for adjustably supporting the first-named frame on the second-named frame to vary the depth at which the excavator operates, ground-breaking means supported in advance of the excavator, and a lateral conveyer at the rear of the excavator comprising a plurality of rotary devices, each provided with blades for transferring the material to the next successive rotary conveying device, and means for driving said rotary devices.

In testimony whereof I have hereunto set my hand this 4th day of November, 1905.

CHARLES KERR.

In presence of—

C. V. BARNARD,
W. H. CARTLEDGE.