

No. 656,715.

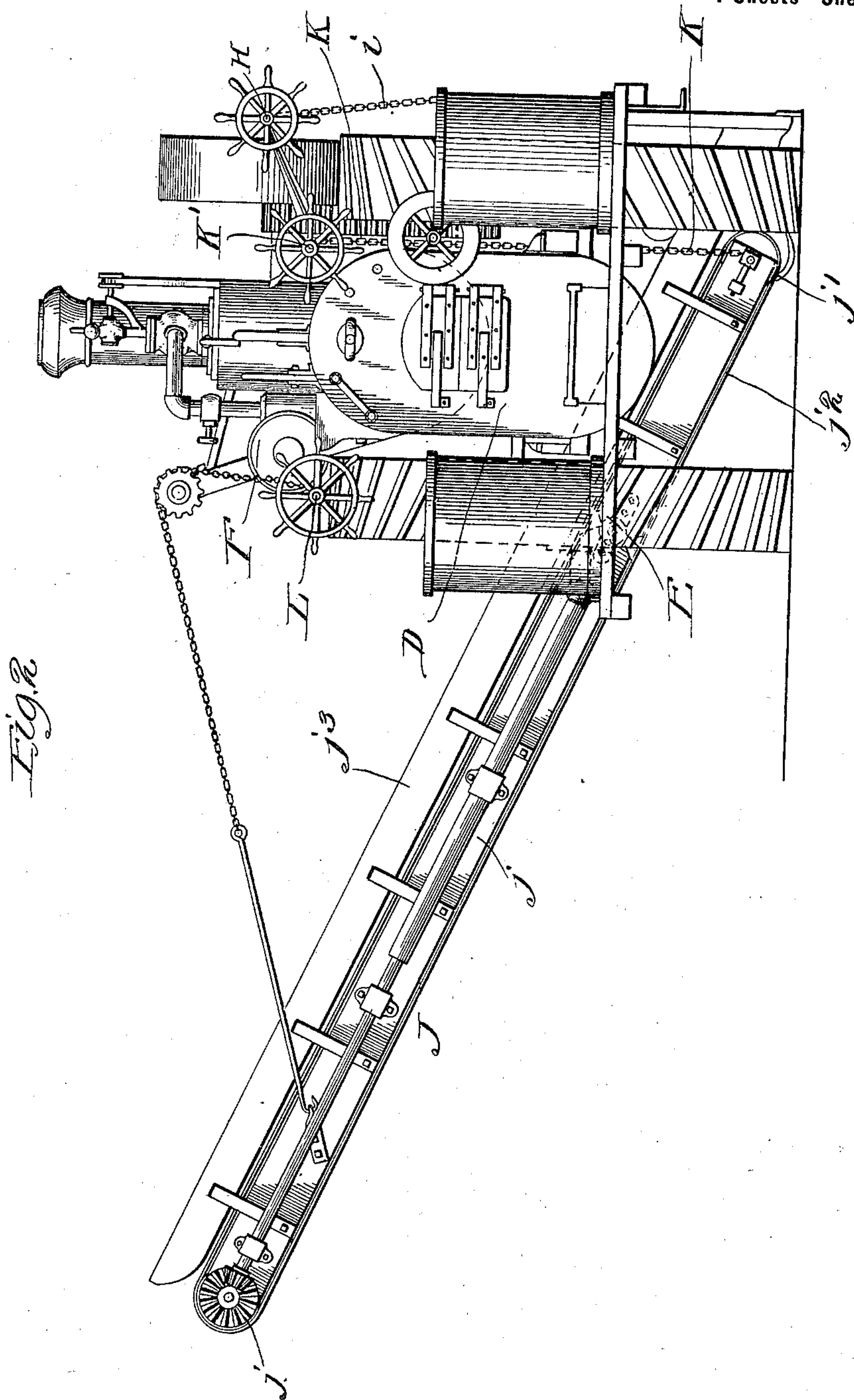
Patented Aug. 28, 1900.

M. G. BUNNELL.
AUTOMOBILE DITCHING AND GRADING MACHINE.

(Application filed June 20, 1900.)

(No Model.)

4 Sheets—Sheet 2.



Witnesses
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Inventor
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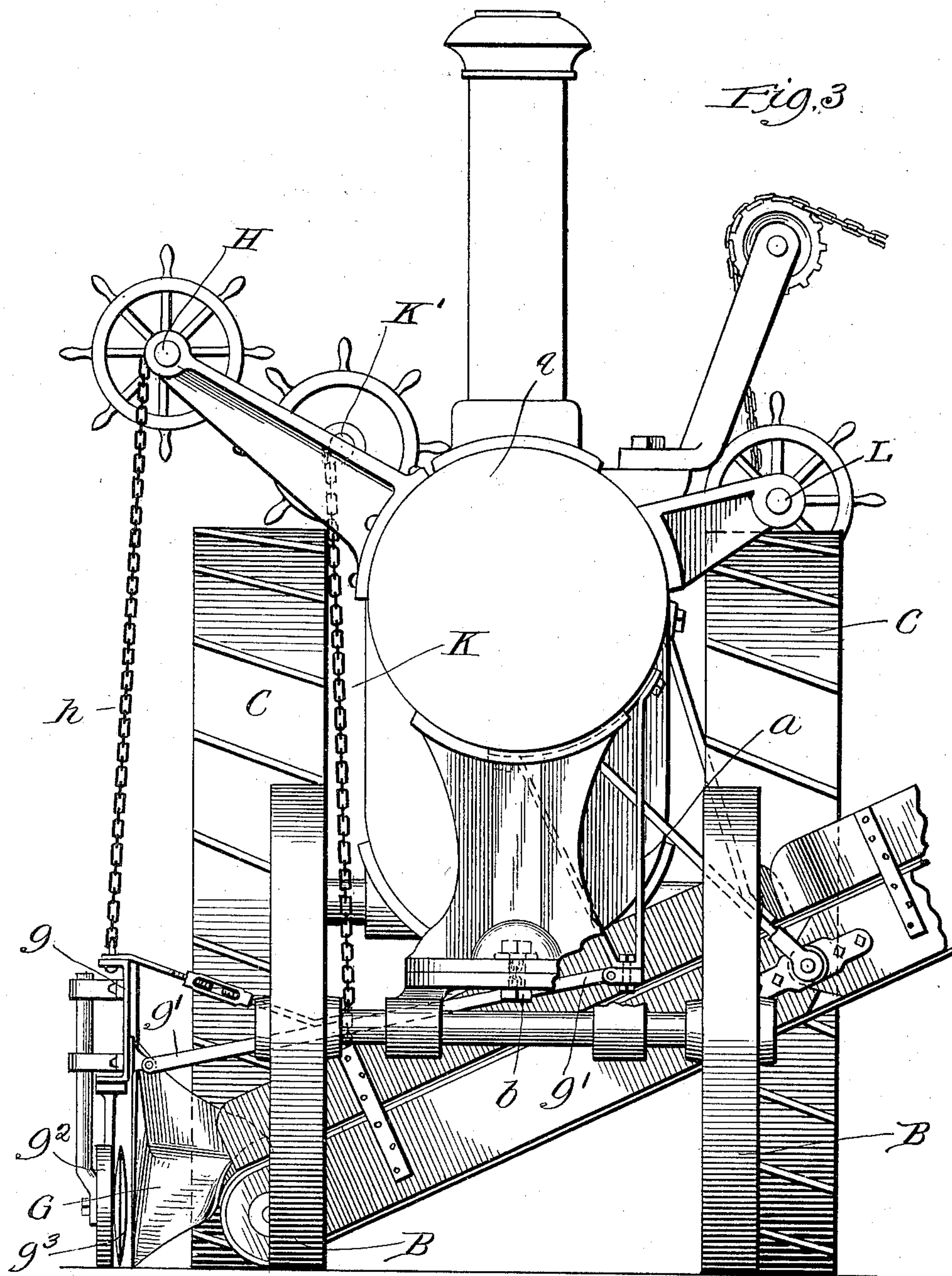
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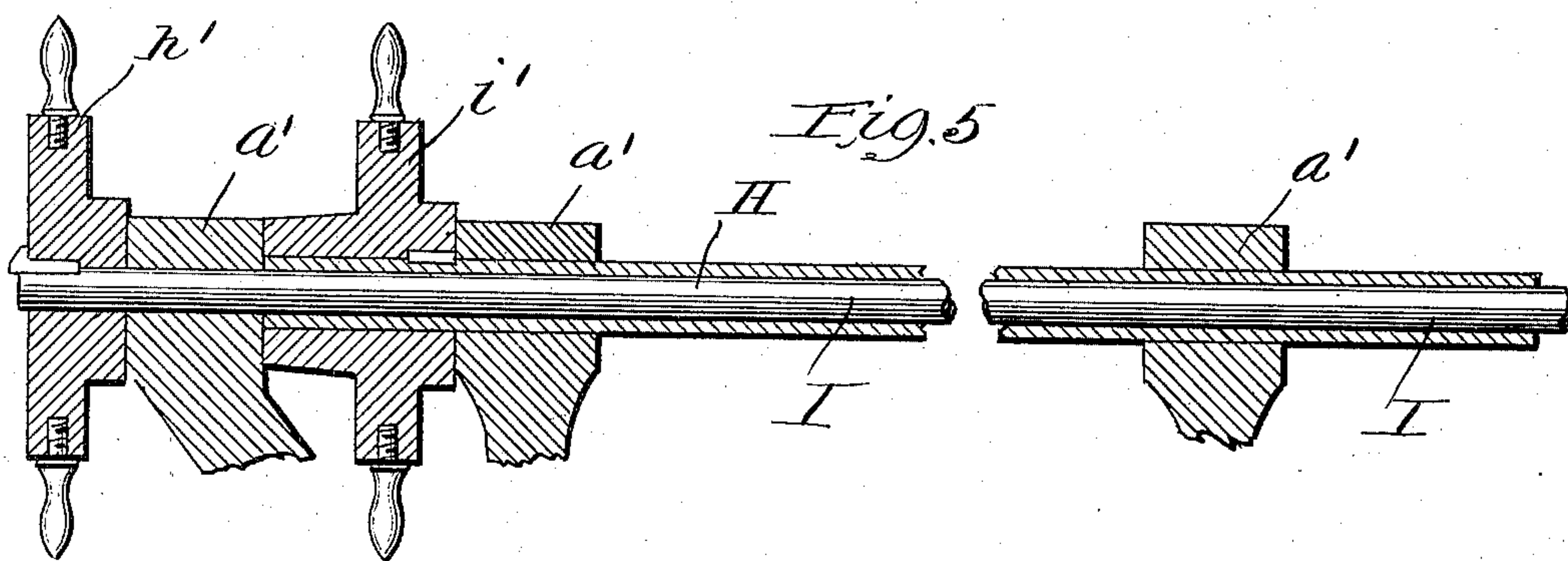
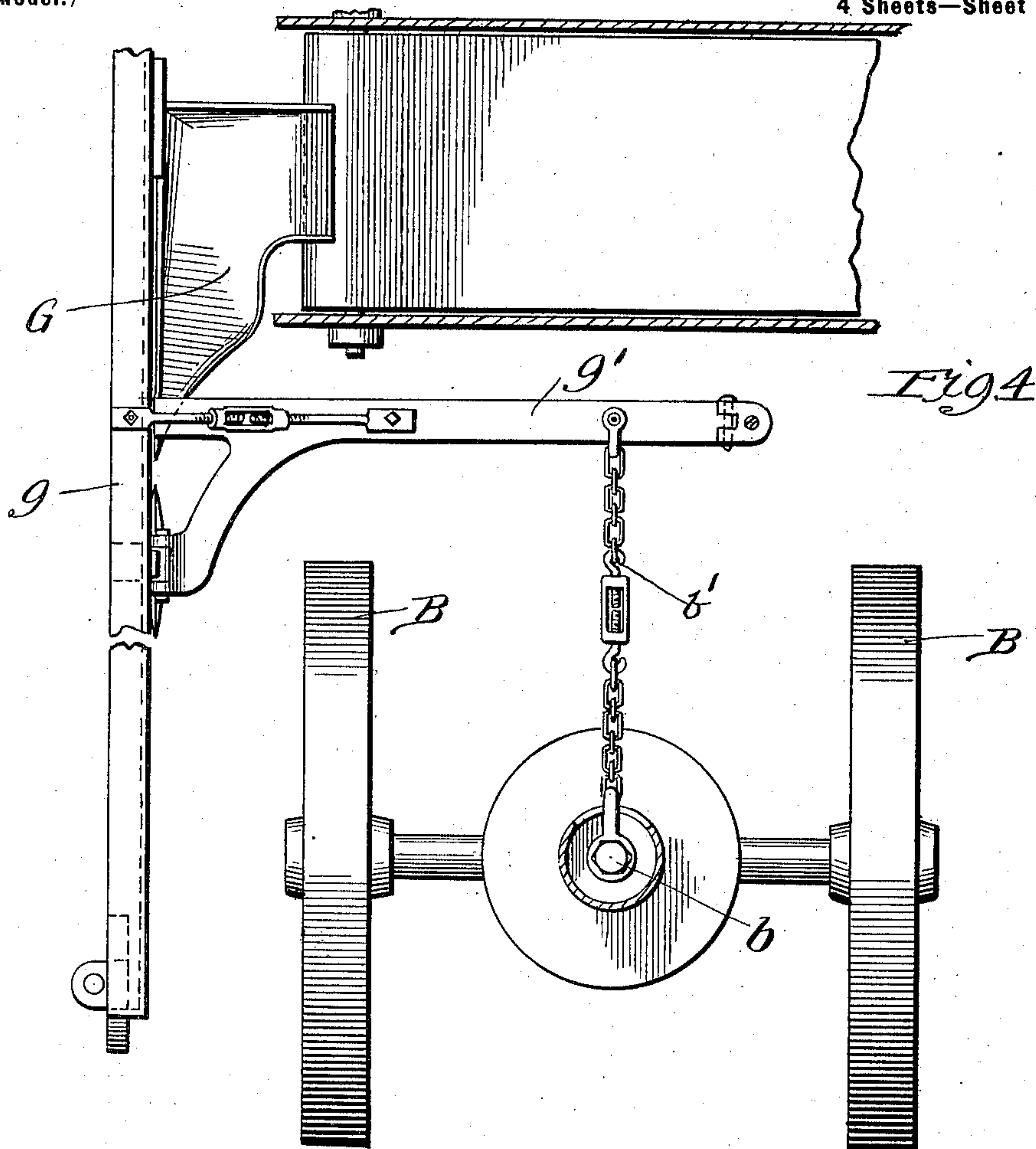
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UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO JOSIAH CRATTY, OF SAME PLACE.

AUTOMOBILE DITCHING AND GRADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,715, dated August 28, 1900.

Application filed June 20, 1900. Serial No. 20,969. (No model.)

To all whom it may concern:

Be it known that I, MORTON G. BUNNELL, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Automobile Ditching and Grading Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention contemplates a self-propelled excavator comprising a horizontal boiler mounted upon wheels and serving as a support for a plow and belt conveyer. The said plow is preferably suspended from the boiler at a point in advance of one of the traction-wheels. The belt conveyer, which receives the soil from the plow, is hung from the boiler in such manner as to project for some distance from the side of the machine. Suitable power-transmitting connection is provided between said engine and one or more of the traction-wheels, and this engine is also employed for driving the said conveyer. Preferably the plow has a swinging connection with the boiler, and the draft is from the forward running-gear. The construction and operation of my improved excavator will, however, hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a side elevation of an automobile grading and ditching machine embodying the principles of my invention. Fig. 2 is a rear elevation of the same. Fig. 3 is an enlarged front elevation of the excavator, the overhanging portion of the conveyer being broken away. Fig. 4 is a plan of the plow, the forward running-gear, and a portion of the conveyer. Fig. 5 is a longitudinal section of the mechanism for raising and lowering the plow.

As thus illustrated, my invention comprises a horizontal boiler A, mounted upon front steering-wheels B and rear traction-wheels C. A fire-box D and a footboard or platform E are provided at the rear end of said boiler. An engine F is mounted upon said boiler and gear-connected with one or more of said traction-wheels. The excavating-plow G is arranged in advance of one of said traction-wheels, and its beam *g* extends along-side of one of the said steering-wheels. Preferably the plow is more or less out of line

with the traction-wheel—that is to say, the plow is somewhat outside of such wheel (see Fig. 3)—and the combined draft and balance bar *g'* connects the plow-beam with a bracket *a*, which depends from the boiler. A draft-chain *b'* connects the said bar with the forward running-gear, the connection being preferably with the king-bolt *b*. The forward end of the plow-beam can be provided with a caster-wheel *g²* and a colter *g³*. The brackets *a'*, which project from the side of the boiler, are adapted to afford bearings for the shaft H and the sleeve I. Said shaft is connected with the forward end of the plow-beam by means of a chain *h*, and a second chain *i* serves as a medium of connection between the sleeve and rear end of said beam. Hand-wheels *h'* and *i'* are secured to the rear ends of said shaft and sleeve. With this arrangement it is obvious that the plow-beam and plow can be raised and lowered at will and that the beam can be tilted so as to either depress or raise the point of the plow.

The carrier or conveyer J can be of any suitable construction. As illustrated, it comprises a frame *j*, upper and lower rolls *j'*, a belt *j²*, trained over said rolls, and side boards *j³*. The carrier thus constructed is hung transversely from the middle portion of the boiler, and the carrying-belt is driven from the engine through the medium of any suitable power-transmitting connection. The lower and inner end of the conveyer, which is arranged to receive the soil from the plow, is supported by chains K. These chains have their upper ends wound upon a hand-wheel shaft K', mounted in bearings on the boiler. A second hand-wheel shaft L has a similar connection with the outer end of the carrier. With this arrangement the carrier can be raised and lowered or tilted to suit the character of the work. The soil received from the plow is carried by the belt to the outer end of the conveyer and there discharged either onto the ground or into a wagon traveling at the side of the machine.

In operation the plow is lowered to a working position, and the machine is then driven forward in the direction desired for the excavation. The forward movement of the excavator, as well as the adjustment of the

plow and conveyer, is under the control of an attendant standing on the platform E, it being understood that any suitable arrangement can be adopted for steering the machine and that whatever form of throttle-valve is employed will preferably be within reach of said attendant. The soil torn up by the plow is, as previously stated, delivered to the lower end of the conveyer, from whence it is then transferred to a point some distance from the side of the machine.

A steam or automobile excavator thus constructed is simple and easily operated, requiring but a single attendant.

What I claim as my invention is—

1. A steam-excavator comprising a horizontally-disposed boiler mounted upon front steering-wheels and rear traction-wheels, a plow arranged at one side of said boiler and suspended from adjusting mechanism or devices mounted thereon and operable from a point at the rear of said boiler, a transversely-disposed belt conveyer supported from the under side of said boiler and arranged to receive the soil from said plow, adjusting devices mounted upon said boiler and suitably connected with said conveyer, said devices for adjusting the conveyer being operable from a point at the rear of the boiler, and an engine mounted upon said boiler and having power-transmitting connection with said traction-wheels.

2. A steam-excavator comprising a horizontally-disposed boiler mounted upon front steering-wheels and rear traction-wheels, an engine mounted upon said boiler and gear-connected with one or both of said traction-wheels, a plow arranged in advance of one of said traction-wheels and suspended from adjusting devices mounted upon said boiler, a combined draft and balance bar connecting said plow with said boiler, a draft-chain connecting said bar with the king-bolt, a belt conveyer supported from the boiler and arranged to receive the soil from said plow, and adjusting devices mounted upon said boiler and suitably connected with said conveyer, said means for adjusting the plow and carrier being operable from a point at the rear of said boiler.

3. A steam-excavator comprising a horizontally-disposed boiler mounted upon front steering-wheels and rear traction-wheels, a plow supported from the boiler at a point in advance of one of said traction-wheels and having a draft connection with the forward running-gear, a conveyer supported by the boiler and arranged to receive the soil from said plow, and an engine mounted upon said boiler and gear-connected with one or both of said traction-wheels.

4. A steam-excavator comprising a boiler mounted upon wheels, an engine mounted upon said boiler and gear-connected with one or both of the rear wheels, a plow arranged at one side of said boiler and having a draft connection with the running-gear, a belt con-

veyer supported transversely below the boiler and arranged to receive the soil from said plow, longitudinally-arranged shafts mounted in bearings on said boiler and provided at their rear ends with hand-wheels, and chains connecting said shafts with said plow and conveyer, substantially as and for the purpose set forth.

5. A steam-excavator comprising a boiler supported upon wheels, an engine mounted upon said boiler and gear-connected with one or more of said wheels, a plow having a swinging connection with said boiler and a draft connection with the king-bolt, a belt conveyer supported from the boiler and arranged to receive the soil from said plow, and suitable power-transmitting connection between said conveyer and said engine.

6. A steam-excavator comprising a horizontally-disposed boiler mounted upon wheels, an engine mounted upon said boiler and gear-connected with one or more of said wheels, a plow arranged at one side of said boiler, a shaft and sleeve therefor mounted in bearings on said boiler and provided at their rear ends with suitable hand-wheels, chains connecting said shaft and sleeve with the beam of said plow, a belt conveyer hung from said boiler and arranged to receive the soil from said plow and power-transmitting connection between said conveyer and said engine.

7. A steam-excavator comprising a horizontally-disposed boiler supported upon front steering-wheels and rear traction-wheels, a bracket depending from said boiler, a plow arranged at one side of said boiler and having a swinging connection with said bracket, bracket-bearings projecting from the side of said boiler, a shaft and sleeve mounted in said bearings, chains connecting said shaft and sleeve with the beam of said plow, a belt conveyer hung from said boiler and arranged to receive the soil from said plow, hand-wheel shafts mounted in bearings on said boiler, and chains connecting said shafts with said conveyer, substantially as and for the purpose set forth.

8. A steam-excavator comprising a horizontal boiler provided at its rear end with a fire-box and platform, the same being supported upon front steering-wheels and rear traction-wheels, a plow arranged in advance of one of said traction-wheels, adjusting mechanism mounted upon said boiler and operable from said platform, chains connecting said mechanism with the said plow, a belt conveyer hung transversely from the boiler at a point forward of said fire-box and arranged to receive the soil from said plow, an engine mounted upon said boiler and gear-connected with one or more of said traction-wheels, a draft connection between said plow and the forward running-gear, and power-transmitting connection between said engine and conveyer, substantially as and for the purpose set forth.

9. The combination of a horizontal boiler

supported upon wheels, a driving-engine mounted upon said boiler, an excavating-plow suspended from the forward portion of said boiler, a belt conveyer hung transversely from the middle portion of said boiler, means for raising and lowering said plow and conveyer, and means for connecting said engine with said conveyer and also with one or more of said wheels.

10 10. The combination of a horizontal boiler mounted upon front steering-wheels and rear traction-wheels, a plow arranged in advance of one of said traction-wheels and having its beam extending alongside of one of said steering-wheels, bracket-bearings secured to the boiler and projecting laterally therefrom, a shaft and sleeve mounted in said bearings and provided with hand-wheels, chains connecting said shaft and sleeve with said plow, 15 a draft connection between said plow and the forward running-gear, a belt conveyer hung from the middle portion of said boiler and ar-

ranged to receive the soil from said plow, hand-wheel shafts mounted in bearings on said boiler and having chain connections with said conveyer, and an engine mounted upon said boiler and having power-transmitting connections with said conveyer and one or more of said traction-wheels. 25

11. An automobile grading and ditching machine comprising in combination a boiler and engine supported upon traction and steering wheels, a plow arranged immediately in advance and more or less outside of one of said traction-wheels, a belt conveyer hung beneath said boiler and extending from said plow to a point some distance from the machine, and suitable power-transmitting connections between the engine and conveyer and one or more of said traction-wheels. 30 35

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Witnesses:

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BENJAMIN S. WILEY.