

W. E. McCHESNEY.
HYDRAULIC EXCAVATOR.
APPLICATION FILED APR. 2, 1912.

1,055,548.

Patented Mar. 11, 1913.

3 SHEETS—SHEET 1.

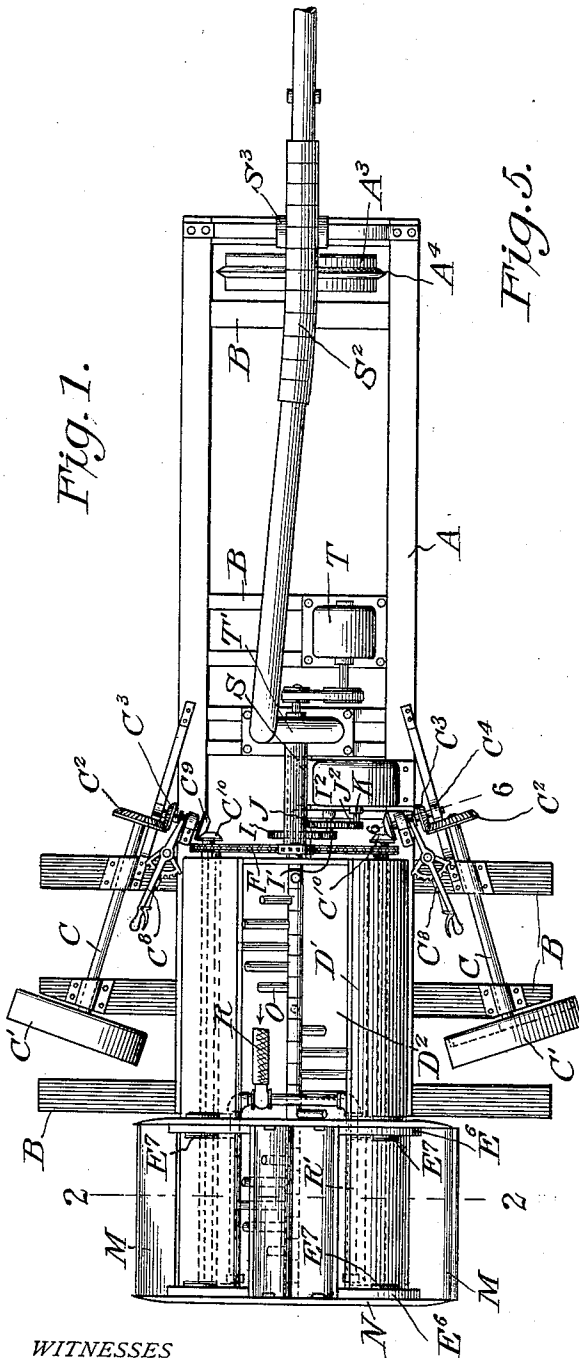


Fig. 1.

Fig. 5.

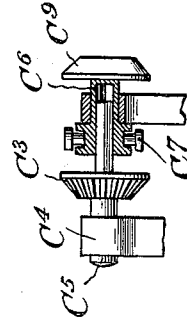
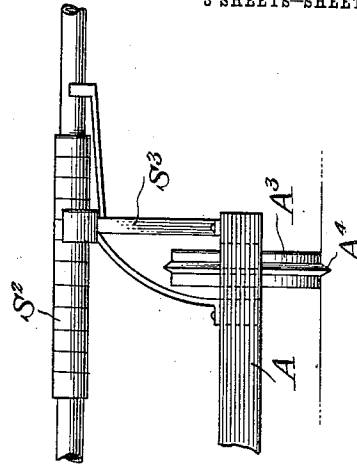


Fig. 6.

WITNESSES
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3 SHEETS-SHEET 2.

Fig. 2.

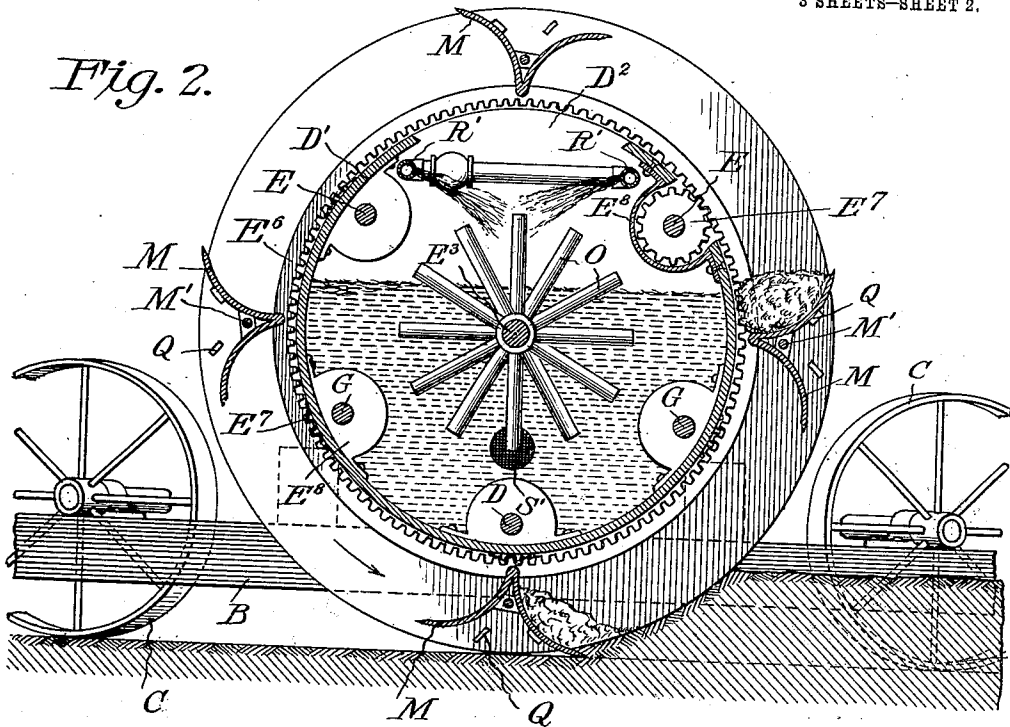
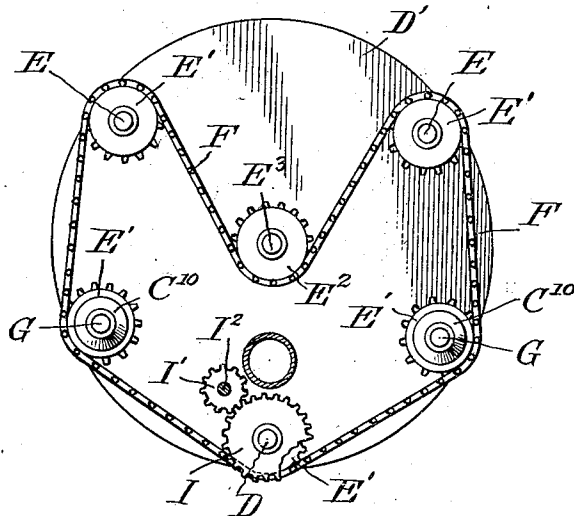


Fig. 3.



WITNESSES

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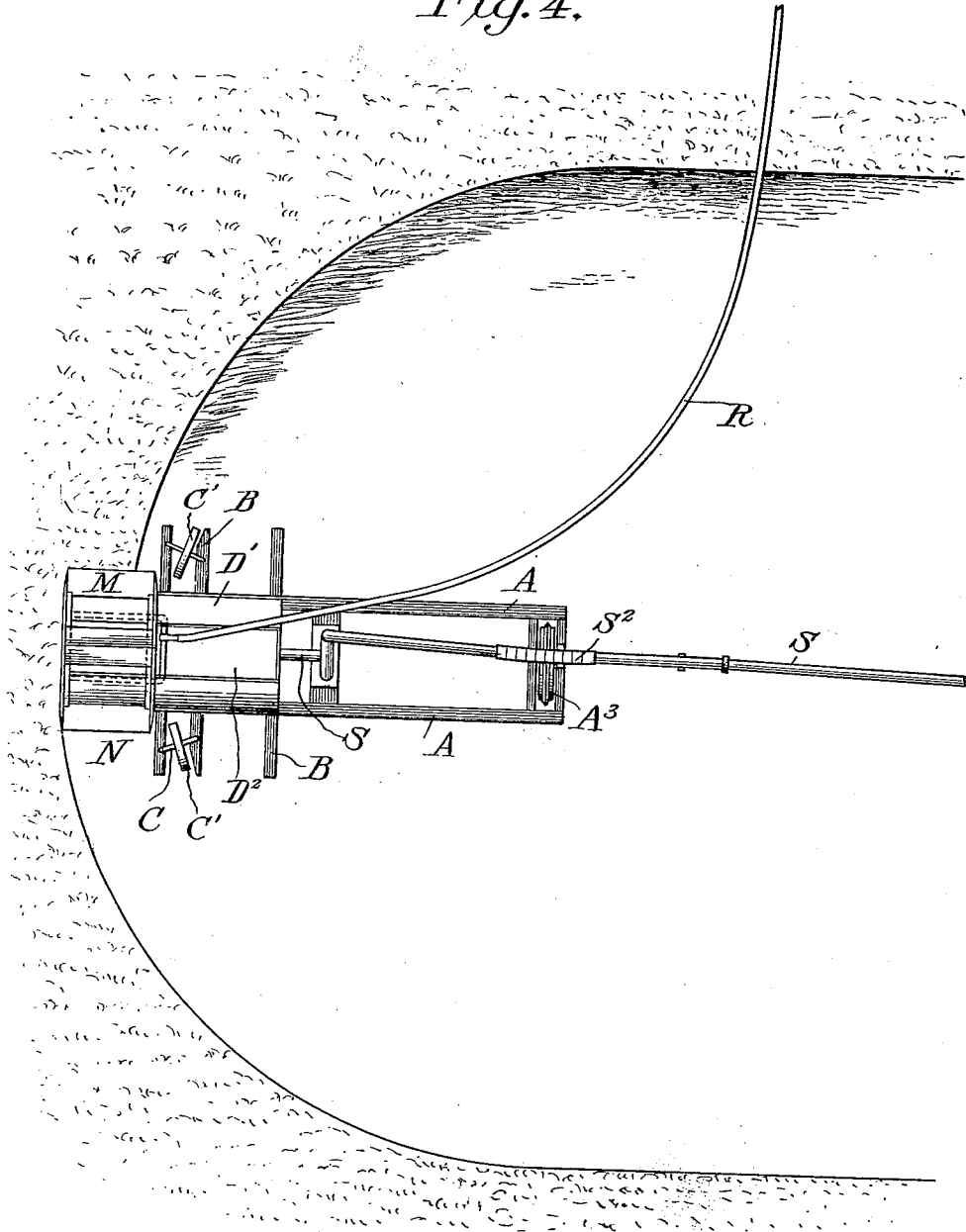
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3 SHEETS-SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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HYDRAULIC EXCAVATOR.

1,055,548.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALLACE E. McCHESNEY, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Hydraulic Excavators; 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in hydraulic excavator apparatus and comprises a simple and efficient mechanism of this nature having various details of construction and combinations and arrangements of parts which will be hereinafter fully described, shown in the accompanying drawings and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a top plan view of my improved hydraulic excavator. Fig. 2 is a sectional view taken on line 2—2 of Fig. 1. Fig. 3 is an end view of a cylindrical sleeve about which the excavator rotates. Fig. 4 is a diagrammatic view showing the application of the invention. Fig. 5 is a detail in elevation showing the pivotal wheel and flexible pipe forming part of the apparatus, and Fig. 6 is a sectional view taken on line 6—6 of Fig. 1.

Reference now being had to the details of the drawings by letter, A designates the frame or truck of the apparatus which has parallel cross beams B projecting therefrom upon which the diagonally disposed shafts C are journaled and a wheel C' is fixed to each of said shafts and also a beveled pinion C², which latter meshes with a similar beveled pinion C³, a detail of which is illustrated in Fig. 6 of the drawings and which has a stub shaft C⁵ journaled in the bearing C⁴ and splined to said stub shaft is a hollow sleeve C⁶ having an annular groove engaged by the clutch throwing lever C⁷ which may be held in adjusted positions by means of a hand operated pawl C⁸. The inner end of each sleeve has a beveled friction wheel C⁹ which may be thrown into or out of engagement with a similar friction wheel C¹⁰

mounted one upon each end of a shaft G, which shafts are journaled in suitable bearings in the cylindrical receptacle D', said receptacle comprising a cylindrical body with an opening D² in the upper portion thereof, as illustrated in Figs. 1 and 2 of the drawings.

It will be noted upon reference to Figs. 2 and 3 of the drawings that there are, in addition to the shafts G, other shafts E of similar construction and each having a sprocket wheel E' fixed thereto and about which a sprocket chain F passes, which sprocket chain also passes about a sprocket wheel E² which is fixed to the centrally disposed shaft E³. A gear wheel I is fixed to the shaft D and is driven by intermeshing with a pinion I' fixed to a stub shaft I² and mounted in a bearing in the frame of the apparatus and which shaft I² also carries a gear wheel J intermeshing with a pinion J' mounted upon the motor shaft K. The central shaft E³ has stirrer arms O projecting therefrom in spiral arrangement, as shown clearly in Fig. 1 of the drawings, which serve as means for stirring up the contents of the receptacle with water which is sprayed therein. Mounted to rotate about one end of said receptacle D' is a cylindrical excavator N which has a series of excavator scoops or plows M, shown in section in Fig. 2 of the drawings, pivotally mounted upon the shafts M', suitable stops Q being provided to limit the oscillating movement of each scoop or plow, as shown. An internally toothed ring E⁶ is fixed to the inner circumference of the excavator and is in mesh with a series of gear wheels E⁷, which are fixed one to each of the shafts E, G and D, each mounted within a casing E⁸, one only of which is shown in section in Fig. 2.

Upon reference to Fig. 1 of the drawings, it will be noted that the upper portion of the cylindrical excavator has an opening therein through which the soil raised by the scoops or plows is adapted to fall by gravity into the interior of the receptacle D' about the end of which the excavator rotates. A water main R having branching pipes R' is provided for supplying water to the interior of the receptacle D' for the purpose of converting the soil into a semiplastic condition so that it may be drawn through the pipe S by suction and conveyed to any suitable location. Said pipe S has a screen S' over the

end thereof, as shown in Fig. 2 of the drawings, and a motor T provides means whereby a rotary pump mounted within the casing T' may afford a suction for withdrawing the soil in a semiplastic form and conveying the same away to be deposited at a distance. The pipe S has a flexible joint S², shown in detail in Fig. 5 of the drawings, and which is supported upon a standard S³ rising from the frame of the apparatus and immediately over the pivotal wheel A³, which latter has a rib A⁴ upon its circumference.

The operation of my apparatus will be readily understood and is as follows:—The parts being adjusted as shown in the drawings, the dredging machine is adapted to have a swinging movement, as indicated in the diagrammatic view, Fig. 4 of the drawings. The motor upon the apparatus serves to cause the cylindrical excavator to rotate and scoop up the soil as the frame through the gear mechanism propelled by the motor shown is given a swinging movement with a radius equivalent to the length of the frame, the wheel A³ acting as a pivot, the rib thereon serving as a means to hold one end of the frame stationary as the other end swings back and forth in describing the arc of a circle. As the soil is raised and automatically dumped into the receptacle D', it is agitated by the arms upon the central shaft E³ and reduced to a semiplastic condition by being mixed with the water which is introduced therein, after which the material reduced to

such semiplastic condition may be pumped by the suction apparatus and conveyed back and deposited at any suitable location.

What I claim to be new is:—

1. A hydraulic excavator apparatus comprising a frame, driving wheels and shafts carrying the same, said shafts being positioned at angles to each other, means for driving the shafts whereby the frame may be swung laterally, a pivot wheel mounted at one end of the frame, a receptacle upon the latter, a pipe for introducing water into the receptacle, a rotatable excavator movable about the latter, a flexible suction pipe communicating with the receptacle, and means for rotating the excavator, as set forth.

2. A hydraulic excavator apparatus comprising a frame, driving wheels and shafts carrying the same, said shafts being positioned at angles to each other, means for driving the shafts whereby the frame may be swung laterally, a pivot wheel mounted at one end of the frame and having a circumferential rib thereon, a receptacle upon the frame, a pipe for conducting water thereto, a rotatable excavator movable about the receptacle, and a flexible pipe communicating with the receptacle, as set forth.

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

WALLACE E. McCHESNEY.

Witnesses:

R. J. HOUGH,
L. GONSALVES.