R. P. McCORMICK.

EXCAVATOR.

APPLICATION FILED JUNE 1, 1908.

922,314.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

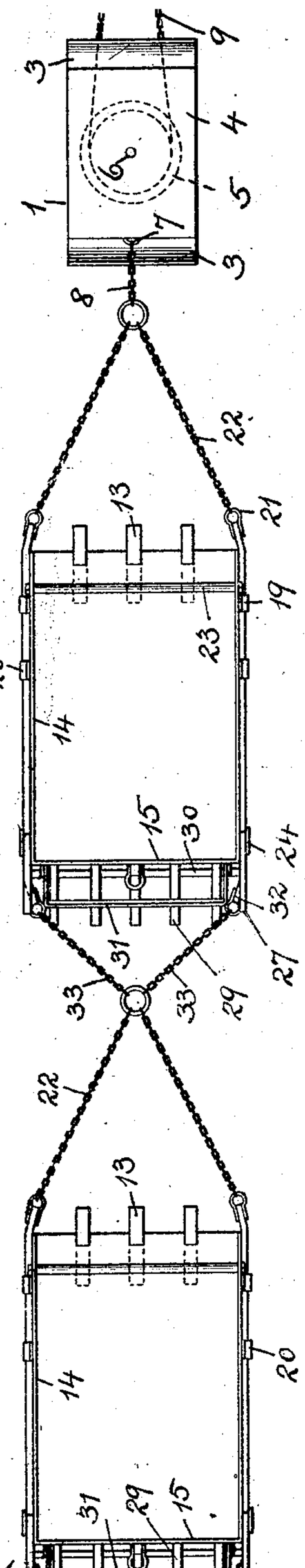

Fig. 1.

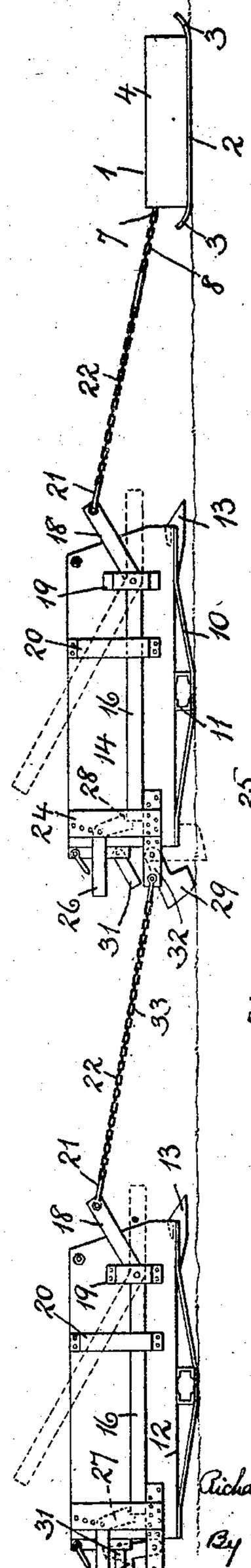

Fig. 2.

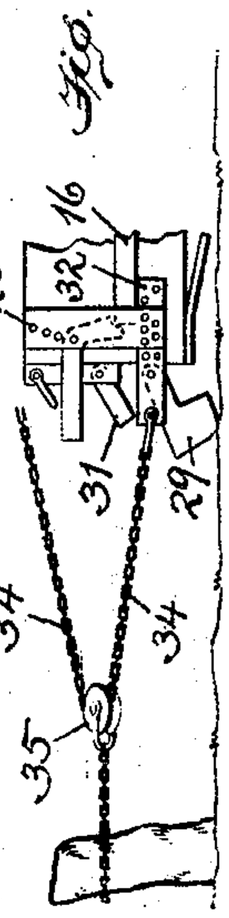

Fig. 2a.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

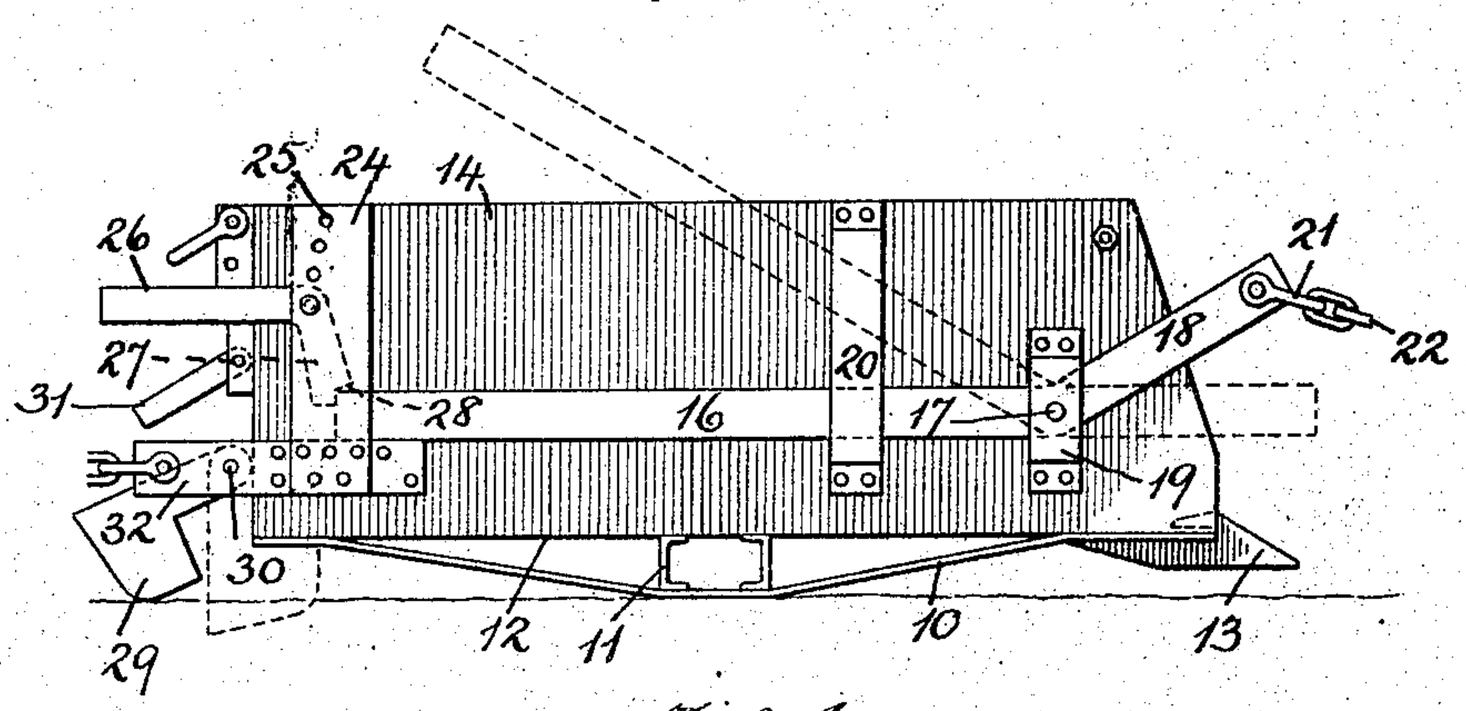



Fig. 4.

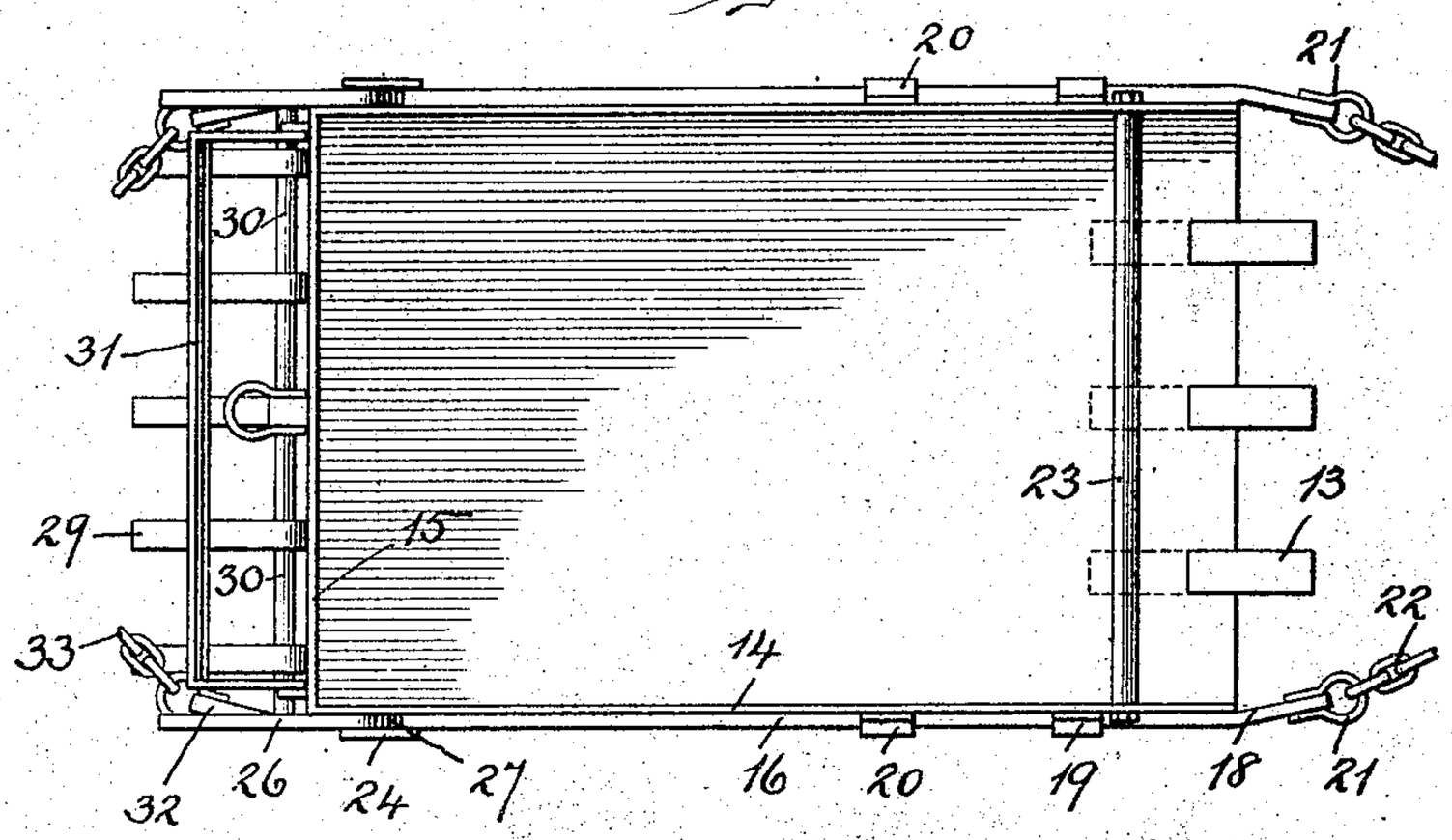
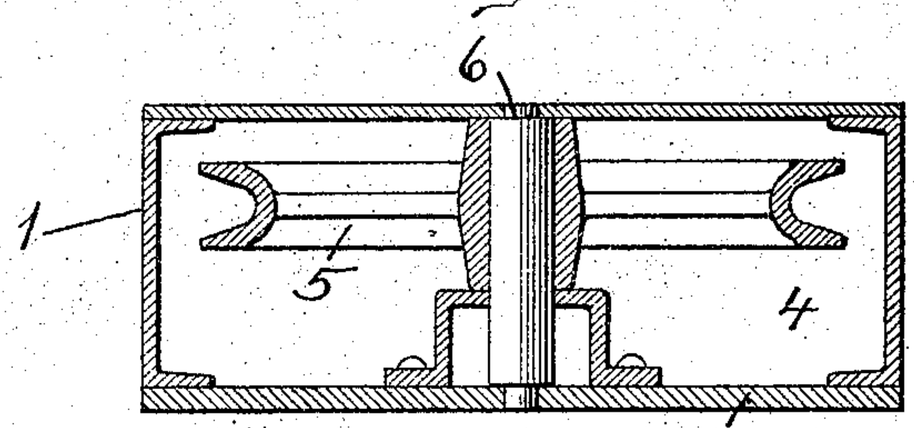



Fig. 5.




Witnesses

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# UNITED STATES PATENT OFFICE.

RICHARD P. McCORMICK, OF GRANITE, MARYLAND.

## EXCAVATOR.

No. 922,314. Specification of Letters Patent. Patented May 18, 1909.

Application filed June 1, 1908. Serial No. 436,159.

*To all whom it may concern:*

Be it known that I, RICHARD PARKER MCCORMICK, a citizen of the United States, residing at Granite, in the county of Baltimore and State of Maryland, have invented a new and useful Excavator, of which the following is a specification.

This invention relates to improvements in excavators and has particular reference to a traveling excavator that will plow, cut-up and excavate earth, loose rock, hard-pan and other similar materials preparatory to the building of railroads, county roads, municipal works, sewers, soft-ground, tunnels and similar engineering projects.

One object of the invention is to provide an excavator that will materially cheapen the cost of excavations, reduce the labor cost to a minimum and which may be readily shifted from one position to another as the work progresses.

Another object is to provide an improved construction of excavating apparatus which may be operated so as to loosen and plow the soil when it travels in one direction and to load and carry away the loosened or plowed soil when moved in a reverse direction.

A further object of the invention is to provide an improved excavating apparatus that will be constantly drawn down at its forward end during the loading operation thus preventing the same from merely riding over the surface without scooping up the soil as it travels.

Another object is to provide a rocker support for an excavating apparatus whereby the same may be made to ride over the surface or dip at either end as it travels.

A further object is to provide an improved construction of device which may be interposed between the excavators and the engine or motor whereby the said interposed device may travel on the surface and the excavators trail behind the latter.

With these and other objects in view the invention is illustrated in the accompanying drawings, in which,—

Figure 1 is a plan view of the device. Fig. 2 is a side elevation thereof. Fig. 2ª, shows the cable for returning the scrapers. Fig. 3, is a side elevation of one of the scoops. Fig. 4, is a plan view of the same, and Fig. 5 is a vertical cross-section through the device that is interposed between the scoops and the engine or motor.

Referring to the drawings the numeral, 1, designates the device which I term a turtle and which is interposed between the scrapers and the engine or motor. This turtle comprises a broad flat base, 2, having upwardly-curved forward and rear ends, 3, and has a shell or housing, 4, mounted on the upper side or surface thereof. The shell or housing comprises the parallel side walls with a cover or top plate resting thereon while the front and rear ends of the housing are open. A sheave wheel, 5, is mounted in the housing so as to revolve in a horizontal plane between the base and cover and is supported on a vertical shaft, 6. Adjacent the rear opening I mount a clevis or equivalent device, 7, by means of a vertical pin or bolt so that a chain, 8, may be attached thereto for the purpose of connecting with the scrapers that are to trail behind the turtle. An endless or looped cable, 9, is passed through the front open end of the housing then around the loose sheave wheel and again out through said front opening and this cable is run to a drum of an engine or motor (not shown) so that by shortening the cable or winding it upon the drum the turtle will be drawn over the surface to be excavated. During this forward motion of the turtle over the ground, the curved ends, 3, of the base will ride over obstructions and will prevent the base from digging or cutting into the soil. The scrapers or scoops, the number of which is immaterial and may vary, are to be attached to and trail behind the turtle and as all the scrapers are alike in construction a description of one will be sufficient.

By reference to the drawings it will be seen that the scraper or scoop has a supplemental rocker bottom, 10,—that is, a bottom that inclines or bows downwardly from opposite ends toward the center where it is lowest. A horizontal center beam or support, 11, is interposed between the inclined supplemental bottom and the main bottom, 12, for the sake of strength and rigidity. At the forward end the scrapers are provided with a plurality of spaced-apart plow-teeth, 13, which may be secured thereto in any suitable manner and which project slightly in advance of the main bottom. The scrapers are provided with parallel vertical side walls, 14,

and a vertical rear wall, 15, thus forming a vehicle-like structure which is open at its forward end. The vertical side walls, 14, each carry a pivoted lever, 16, which is pivoted at, 17, and the forward end, 18, of which extends or is turned laterally at an angle with respect to the rear end so that when the said rear end has a horizontal position the forward end will be upwardly inclined. The particular manner of mounting these levers is immaterial and may vary, but in the present instance they are mounted in a bracket or bearing, 19, that is bolted to the side wall of the scraper vehicle, and the rear end of the levers project freely through a keeper bracket, 20, that is also secured to said side wall. A clevis, 21, is provided at the forward end of each lever, 16, and a chain or other flexible connection, 22, connects the clevis with the chain, 8, of the turtle. In order to stiffen the side walls at the open front end I provide a horizontal rod, 23, which connects the same.

At the rear end of the scraper vehicles I provide a vertical guard or bracket plate, 24, which, in the present instance has a plurality of perforations, 25, at or adjacent its upper end. These perforations are arranged in an arc of a circle having the pivot point, 17, of the lever, 16, for the center and between the said plate and the side wall I mount a pivoted dog or lever, 26, having a down-turned forward end, 27, with a notch, 28, at its lower end. The notched end of this dog or lever has a position where it can be swung over the rear end of the lever, 16, when the latter is depressed and in substantially a horizontal plane so as to hold said rear end down and the forward end up. When in this position the chain connection between the scraper vehicle and the turtle will have a downward pull on the front end of the scraper and thus keep the plow teeth, 13, down in the soil while the vehicle is being drawn forward to load the same. When however, the scraper is sufficiently filled it is desirable that the transportation of the load be accomplished with as little resistance as possible and to effect this the dog, 26, is tilted so as to disengage the notch end, 28, from the rear end of lever, 16, whereupon said end will swing up; the forward end thereof will drop and the vehicle will then rock on the rock bottom, 10, because the pull on the chain, 22, will be more direct and the plow teeth, 13, will ride over the surface instead of beneath the latter. It will thus be seen that as the turtle is drawn forward by the cable, 9, the scraper vehicle will plow into, excavate, and fill up the scraper vehicle with the excavated soil and will conduct the load to a point where it may be conveniently discharged. Upon discharging the load the scrapers are then drawn back to the point of excavation, and in making this reverse travel I have found that the scrapers could be utilized so as to then plow, dig up or loosen the soil preparatory to the next forward movement of the scraper. In carrying out this operation I provide at the rear end of the scrapers a plurality of plow teeth, 29. These rear plow teeth are mounted on a horizontal bar, 30, and while they are rigid with the bar they may be swung with the latter. A bail, 31, comprising a cross bar with laterally-turned ends is pivotally mounted with respect to the rear wall of the scraper and above the horizontal bar, 30, and said bail serves to retain the rear plow-teeth in an elevated position when the latter are swung up out of the operative position. When in the lowered position the plow-teeth, 29, project below the main bottom, 12, where they may plow into the soil as the scrapers are drawn rearwardly. When the scrapers are drawn forward these rear teeth, 29, will merely trail behind unless they are swung up and held by the bail, 31.

Suitable horizontal bars, 32, are secured to the rear end of the scraper vehicles and a chain, 33, is attached thereto by means of which another scraper may be drawn behind the first scraper.

In the practical operation of the device the scrapers and turtle are to be drawn by cables first in one direction to plow, load and then move the scrapers to a point of discharge and second then moved in an opposite direction to return the scrapers to the starting point and to plow or loosen the soil while returning. To effect this latter return movement a second cable, 34, is employed which latter is secured to the rear end of the scraper or the rear of the last scraper in case the scrapers are arranged in a tandem or single file formation, and from said last scraper the said cable, 34, is passed through a pulley, 35, having a stationary position, and then to a second drum of the same engine or to the drum of a separate engine, which it is deemed unnecessary to show. It will thus be understood that the cable, 9, will serve to draw the turtle and scrapers in the forward direction while the cable, 34, will return the same to their original positions. It is also obvious that the cable, 34, may be interrupted and one or more scrapers attached thereto so that as one set of scrapers are drawn in one direction another set may be drawn in a reverse direction.

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

1. In an excavator the combination with a scoop body having a rocker at its bottom, of levers pivotally mounted on the body and having their ends movable up and down and means for drawing the scoop,—said means being attached to the movable ends of the pivoted levers.

2. In an excavator the combination with a

scoop body having a rocker support, of levers pivotally mounted on the body and having their ends movable up and down, means for holding the lever-ends in an elevated position, and means connecting with said elevated lever ends for drawing the scoop forward and rocking the body to depress the forward end thereof.

3. In an excavator the combination with a scoop body, of plow teeth at the forward end of said body, levers pivotally mounted on the body and having their forward ends movable up and down, means for holding the lever-ends in the elevated position and means engaging the said lever ends for drawing the scoop forward and applying downward pressure on the plow teeth.

4. In an excavator the combination with a scoop body, of levers pivotally mounted on said body and having both of their ends movable up and down, means for engaging one end of each lever to hold the opposite end thereof elevated and means engaging the said opposite elevated end of the lever to draw the scoop forward.

5. In an excavator the combination with a scoop body, of levers pivotally mounted on said body and having their forward ends movable up and down, plow teeth at the rear end of the body means engaging the pivoted lever ends to draw the scoop forward and means for drawing the scoop rearward.

6. In an excavator the combination with a scoop body, of levers pivotally mounted on said body and having their forward ends movable up and down, a plurality of plow teeth pivotally mounted at the rear end of said body, means for holding the forward ends of the levers elevated, means engaging said forward lever ends for drawing the scoop forward and means for drawing the scoop rearward.

7. In an excavator the combination with a scoop body having side and rear walls, of a turtle comprising a casing having a bottom that curves upward at its end, connections between the turtle and scoop body, and means for drawing the turtle forward.

8. In an excavator the combination with a scoop body having side and rear walls, of a turtle comprising a casing having a bottom with curved opposite ends,—said turtle also carrying a sheave-wheel, a cable passing around the sheave wheel for drawing the latter forward and connections between the turtle and scoop body.

9. In an excavator the combination with a scoop body having side and rear walls, of levers pivotally mounted on said body, a turtle comprising a casing having a bottom to rest upon the ground and carrying a sheave wheel, flexible connections between the turtle and the pivoted levers of the body and a cable passing around the sheave wheel for drawing the turtle forward.

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Witnesses:
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