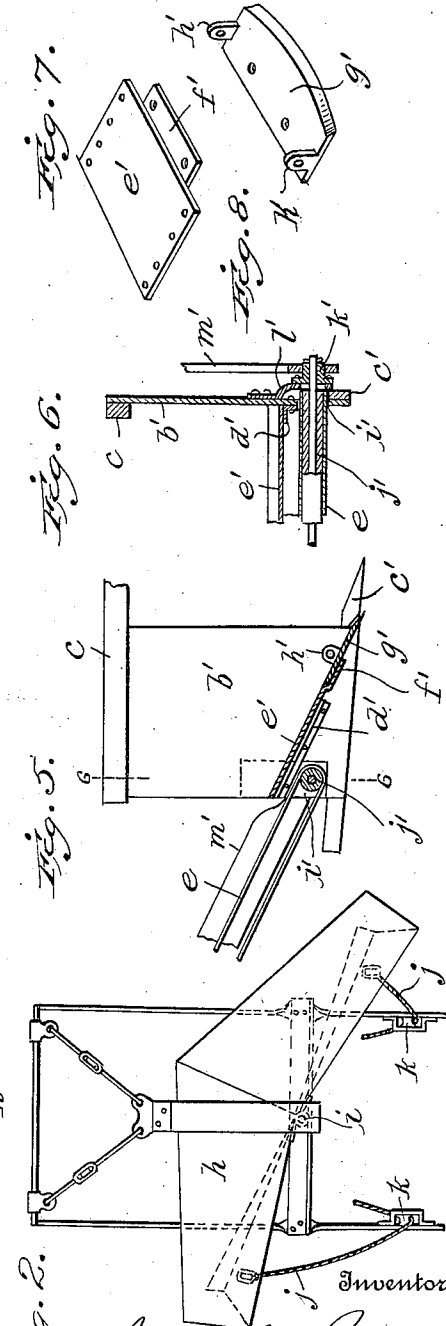
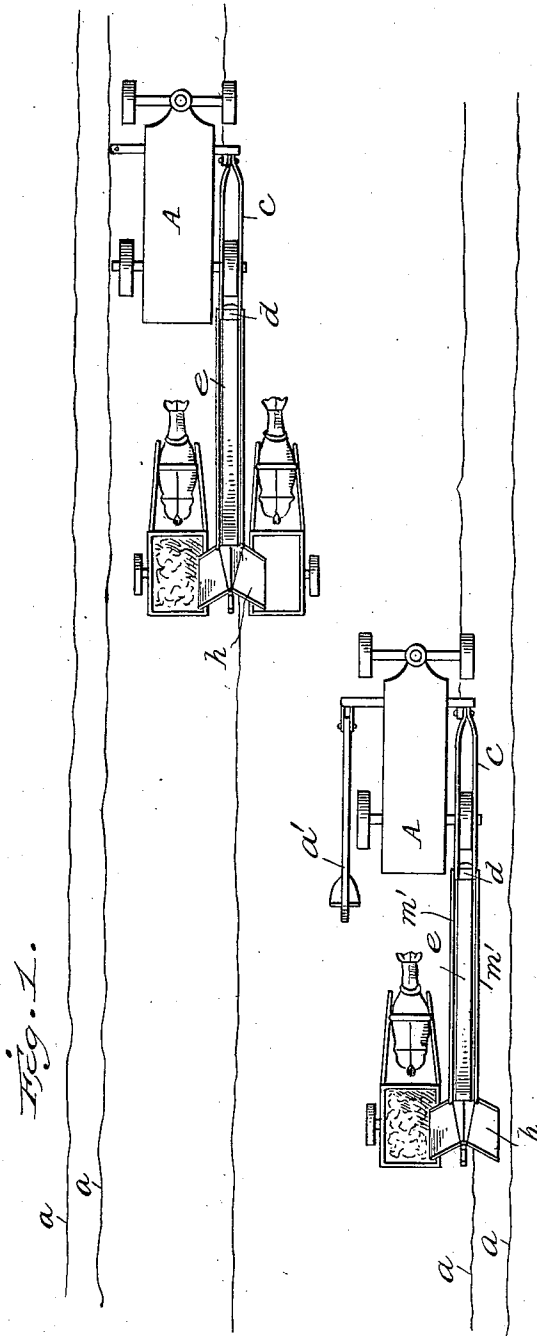


J. M. BROOKS.
EXCAVATOR.
APPLICATION FILED MAR. 9, 1911.

1,018,160.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.



Witnesses

Edwin L. Jewell

W. B. Bridge

By

Fig. 2.

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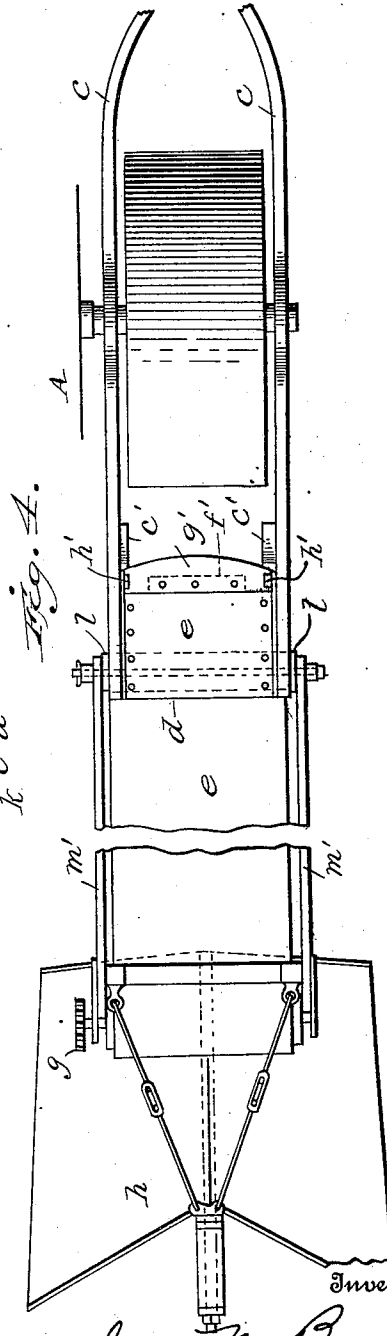
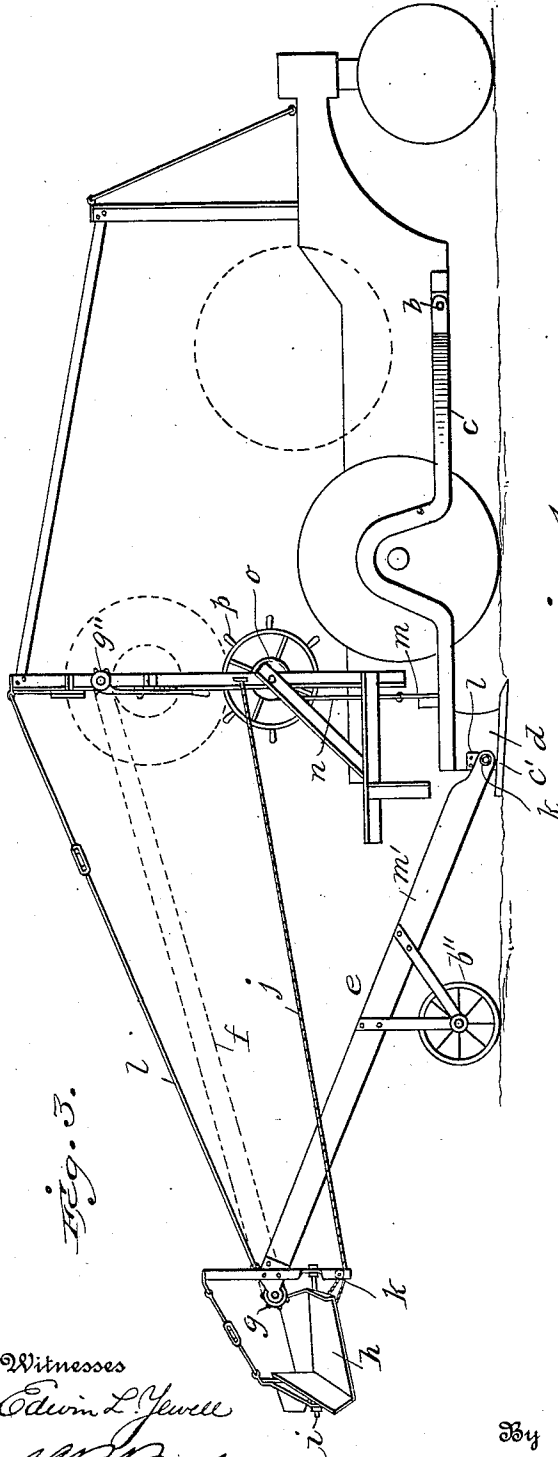
Attorneys

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Witnesses
Edwin L. Jewell
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Attorneys

UNITED STATES PATENT OFFICE.

JAMES M. BROOKS, OF MOLENA, GEORGIA.

EXCAVATOR.

1,018,160.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed March 9, 1911. Serial No. 613,336.

To all whom it may concern:

Be it known that I, JAMES M. BROOKS, a citizen of the United States of America, and a resident of Molena, county of Pike, and State of Georgia, have invented certain new and useful Improvements in Excavators, of which the following is a full clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic plan showing the manner of using my improved excavator in a ditch or cut, the lines *a* indicating the inclined opposite walls of the ditch and in the ditch being illustrated two of my machines working in different positions with respect to the side walls of the ditch; Fig. 2 is a rear elevation of the tiltable dump chute mounted on the rear end of the carrier; Fig. 3 a side elevation showing my improvements applied to a traction engine or other vehicle; Fig. 4 is a detached plan view of the excavating and carrying devices; Fig. 5 is a vertical longitudinal section through the plow; Fig. 6 a transverse vertical section through the rear end of the plow, on the line 6—6 of Fig. 5; and Figs. 7 and 8 perspective views of parts of the plow blade.

The object of my invention is to so locate and arrange the excavating and carrying and discharging means that the earth will be excavated and elevated to the discharge end of the carrier with the least expenditure of power and with the simplest possible machinery, as more fully hereinafter set forth.

The invention also is designed to enable the excavated earth to be dumped directly into carts or wagons which shall move along the ditch with the excavator, the arrangement being such that the operation may be carried on continuously since provision is made for permitting the hauling team to get into position to receive the excavated material while the preceding team is getting its load.

A further object is to so arrange the carrier and discharge means with respect to the traction engine that the hauling teams may follow the traction engine into any ditch, practically speaking, where the traction engine itself has room to work, whereby the self loading or automatic loading operation may be accomplished in much deeper and narrower ditches than has heretofore been possible as more fully hereinafter set forth.

I have not attempted to illustrate in the drawings annexed the details of construction of my apparatus since the details may be varied greatly without departing from the invention. In these drawings I have clearly shown a diagram A of a traction engine or other vehicle provided with its own motive power or adapted to be drawn along by a motor vehicle, and to a suitable part of the frame at one side of the vehicle I pivotally attach, by means of a horizontal pivot *b* the forward end of a plow beam *c*, between the bifurcated parts of whose rear end I mount a plow *d* of the scoop type, that is, a plow substantially U-shaped in cross section and having attached or formed on its front edge a suitable cutting edge, this scoop being open at both ends so that the excavated dirt will pass out off the rear end of the scoop. Attached to the rear end of the plow is the forward end of a belt conveyor *e*, of any suitable type to receive the excavated material and carry it upwardly and rearwardly, the belt of this conveyor being driven by a suitable sprocket chain *f* extending between a suitable sprocket wheel *g'* on the traction engine to a sprocket wheel *g* on the upper roller of the conveyor. The conveyor extends directly backward and its belt is a little wider than the plow scoop in order to prevent choking up of the excavated material on the plow scoop or the conveyor.

The earth as it leaves the upper end of the conveyor is discharged into a tilting double chute *h*, which is pivotally mounted on a rod *i* extending out rearwardly from the frame of the conveyor, whereby by tilting the chute to one side or the other the excavated material may be deposited or discharged to one side or the other of the carrier. Any suitable means may be employed for tilting this chute but I prefer to attach to each end of the chute a rope *j* and carry the same back over pulleys *k* to a convenient point on the traction engine, so that the operator may, by pulling on one rope or the other, tilt the chute one way or the other. The upper end of the conveyor is connected by a tie-wire *l* with the top of the superstructure of the traction engine, to support the conveyor, and in order to raise and lower the plow together with the attached parts I provide the same with a bail *m* and attach the same to a rope *n*, whose upper end is wound around a shaft

o on the traction engine, this shaft being provided with a hand wheel p.

It will be observed that the carrier is located at one side of the traction engine and extends directly backwardly from the plow or scoop; and in this way the earth is carried up to its discharging point with the least possible friction and the simplest form of conveying apparatus. It will be observed also from Fig. 1 that the carrier must be carried backwardly far enough to accommodate a team between the inner or left hand discharge end of the dump chute h and the rear end of the traction engine.

From Fig. 1 it will be observed that with an excavator constructed in accordance with my invention the operation of excavating may be carried on continuously since while one team is loading the other team may drive up into position to receive the earth when the dump chute is reversed. It will be further observed that with my excavator the teams may follow the excavator into the ditch since the carrier and dumping device are so arranged that the teams work practically tandem to the excavator, one of the teams working directly back of the excavator and the other one a little to one side thereof. As shown at the left end of Fig. 1 the team may follow the traction engine even when it is working up close to one of the inclined side walls of the ditch, but of course in this case the dump chute can discharge only to the inner side of the carrier and the advantage of the tilting or reversible dumping device is for the moment lost.

With my invention, it will be observed that the teams may follow the excavator practically wherever the excavator may itself go, so that with my apparatus the excavator may be used with great advantage in ditches much narrower and deeper than has heretofore been possible with automatic loading type of ditching machines. It will be observed therefore that with my apparatus cuts or excavations can be made with great economy in the matter of disposing of the excavated material.

It will be observed that in the drawings I have illustrated a plow a' projecting laterally from the frame of the traction engine on the side opposite to the ditching apparatus. This plow is preferably a plow of subsoil type and its function is to counter-balance or equalize the drag of the ditching devices and thus prevent side draft and consequently enable the traction engine to be steered more easily. The plow may be attached to the frame in any suitable way and may be of any suitable make or variety.

As shown in Fig. 3 I may attach to the carrier e a supporting wheel b'', mounted on a suitable frame depending from the carrier at a suitable point back of where it is attached to the plow, the object of this being

to relieve the vehicle to some extent of the weight of the elevating and dumping apparatus and thus prevent a possible tendency to lift the front end of the vehicle.

A plow consists preferably of a pair of flat standards b' rigidly depending from the two parts of the plow beam c and each having affixed rigidly to its lower edge, on the outside a pointed land side bar c' which incline upwardly and rearwardly. On the inner face of each of the standard plates b' is riveted a bracket angle-iron d', and riveted to these angle-irons is the upwardly inclined bottom plate e' of the plow scoop. Riveted to a forward projection f' of this plate e' is the knife edged plow point g', which is provided with ears h' at its ends for rivet connection to the inner faces of the plates b'. The rear edges of the plates b' are notched at i', and through these notches extends the lower roller j' of the elevator, the belt of the elevator being also wide enough to extend into these notches. The shaft of the roller j' has its ends journaled in bearings k' rigidly affixed to depending brackets l' riveted to the outer faces of the plates b'. The side bars m' of the elevator frame are pivotally connected to the bearings k' at their lower ends. In this manner a very strong and practical plow structure is provided, and the elevator frame bars m' are firmly connected to the plow structure independently of the belt roller j', so that the shaft of the belt roller shall support only the belt, thus contributing to durability and reliability of the parts. It will be observed that the land side bars c' as well as the plow edge g' may be readily removed for adjustment and repair, and it will be observed also that a plow of this construction will present a minimum of resistance in passing through the earth being excavated.

It will be observed that the plow is mounted at the rear right hand corner of the traction vehicle and that the outer edge of the plow cuts along just outside of the outer edge of the rear right hand wheel. With this construction excavating work may be carried on close up to the wall of a ditch. It will be observed also that the two parts of the draft bars of the plow beam straddle the hind wheel of the traction vehicle, being bent upwardly where they pass over the axle thereof, so that the plow may be raised and lowered without making contact with the axle or the hub of the wheel. In this way I not only secure the most direct draft possible but I also bring the plow scoop directly behind and in the path of the wheel. Thus bringing the plow to a position back of the traction wheel, is advantageous in that in certain loose earths the earth will be packed just in front of the plow to a sufficient degree to give it a desirable stiffness that will cause it to pass upwardly under the plow

and the elevator belt in a mass. This is especially desirable in loamy and sandy work, where without compacting the earth it will pack up and collect on the plow blade and have a tendency to continually fall forward and thus increase materially the draft of the plow.

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

1. The combination with a vehicle, of a ditching-plow attached thereto at one side at the rear, said plow being in the form of a scoop and being located directly back of one of the rear wheels of the vehicle, the beam of the plow embracing said wheel and being pivotally connected to the frame of the vehicle, means for raising and lowering the plow, and an elevating mechanism arranged back of the plow, for the purpose set forth.

2. An excavating plow consisting of a beam, a pair of depending flat side plates notched at their rear edges, a bottom plate connecting the side plates, a cutting edge connecting the plates, a bracket fastened to the outer side of each of the side plates coincident with the notch therein, a roller having the ends of its shaft journaled in said brackets and having its ends extending through said notches, a belt layer on the roller whose edges extend into said notches, said roller and belt lying under the rear edge of the said bottom plate, for the purpose set forth.

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

JAMES M. BROOKS.

Witnesses:

W. D. BENNETT,
J. W. CAPEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."