

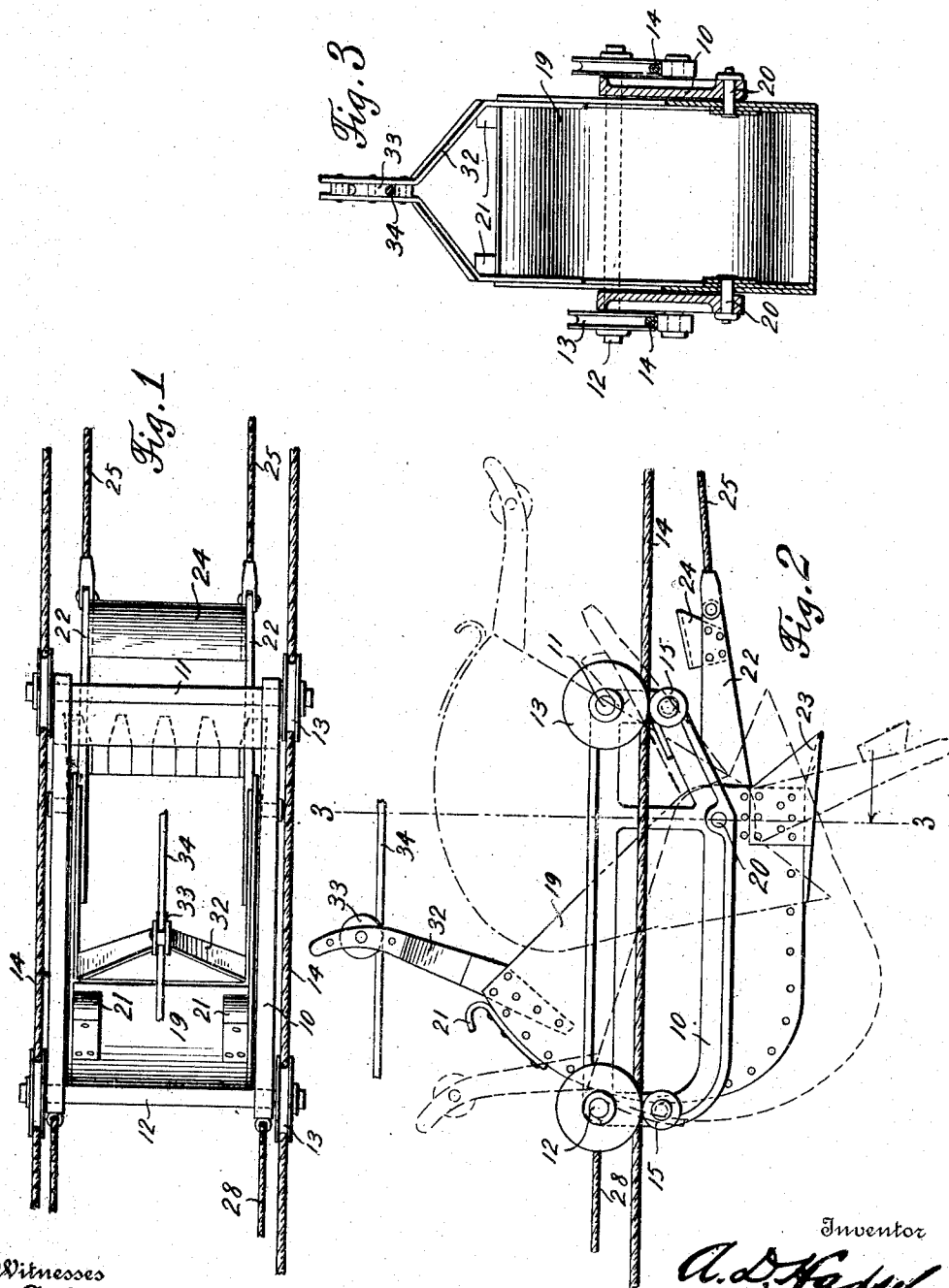
A. D. HADSEL.
EXCAVATOR.

APPLICATION FILED MAY 6, 1910. RENEWED JULY 12, 1911.

1,015,486.

Patented Jan. 23, 1912.

3 SHEETS—SHEET 1.



Witnesses
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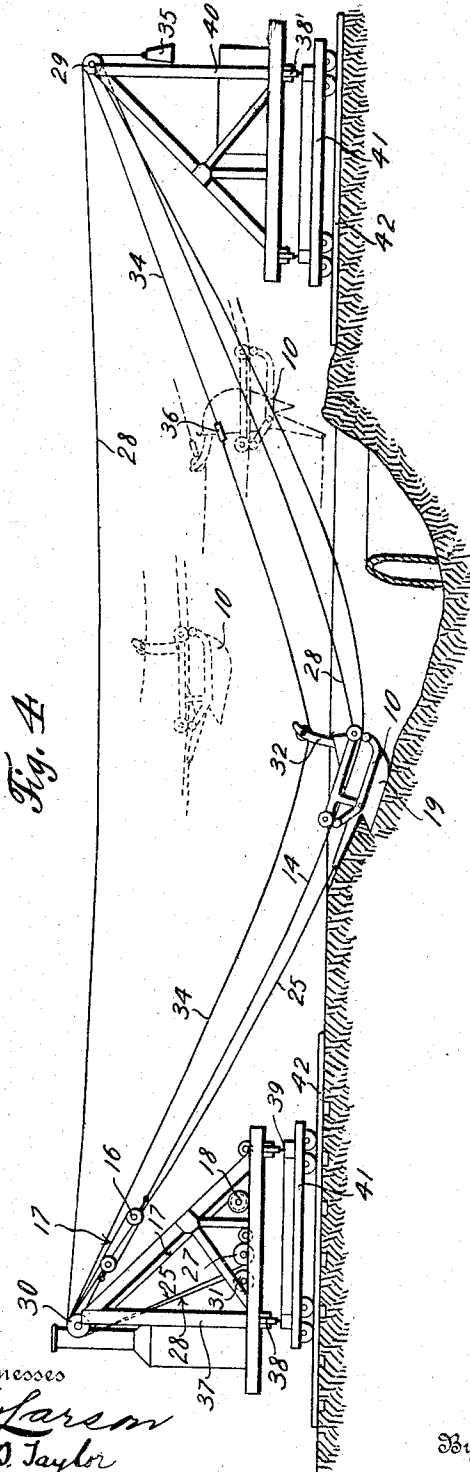
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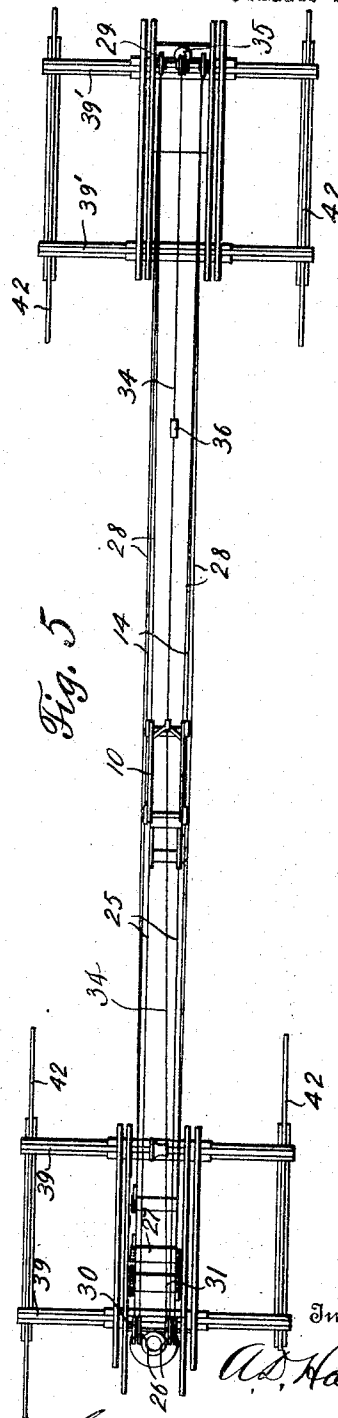
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

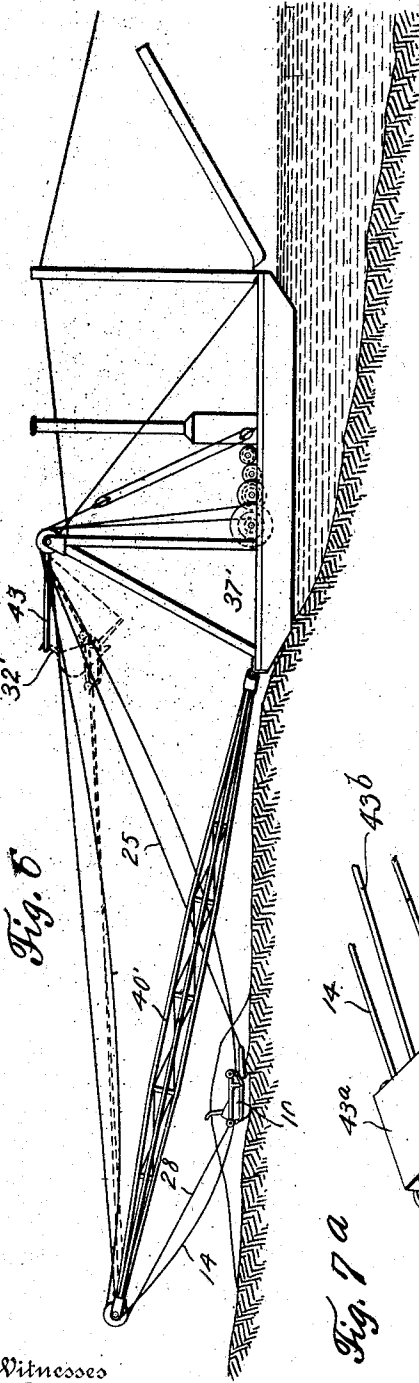


Fig. 6

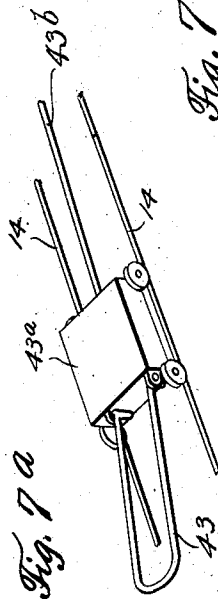
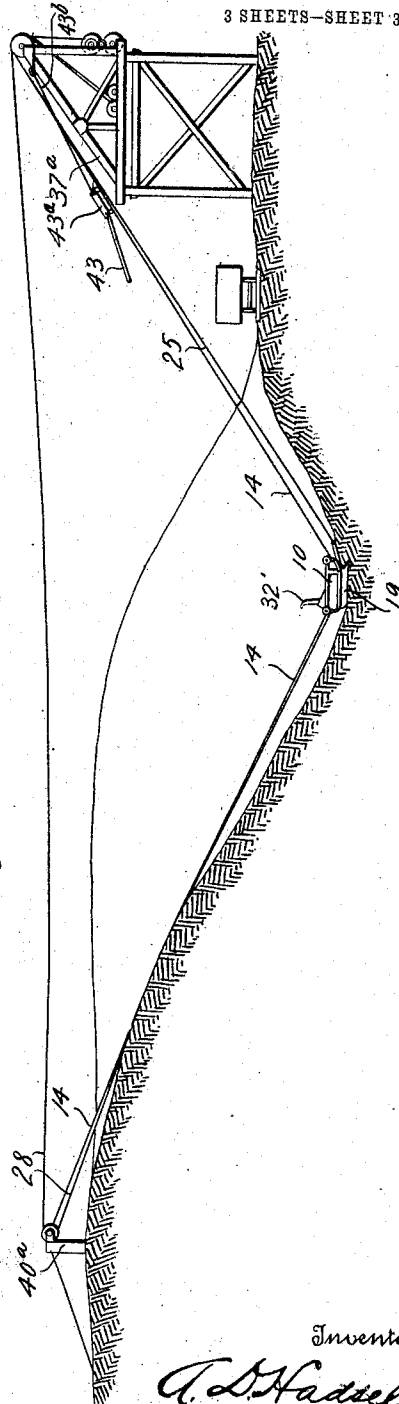


Fig. 7a

Fig. 7



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UNITED STATES PATENT OFFICE.

ALVAH D. HADSEL, OF DORRANCETON, PENNSYLVANIA, ASSIGNOR TO CABLE EXCAVATOR COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A COPARTNERSHIP.

EXCAVATOR.

1,015,486.

Specification of Letters Patent.

Patented Jan. 23, 1912.

Application filed May 6, 1910, Serial No. 559,788. Renewed July 12, 1911. Serial No. 638,209.

To all whom it may concern:

Be it known that I, ALVAH D. HADSEL, a citizen of the United States, residing at Dorranceton, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Excavator, of which the following is a specification.

This invention relates to excavating machines which are known in the trade as distant power devices, and has particular reference to a novel construction of digging and carrying bucket together with certain improvements in means or devices for operating the same, all as will be hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the bucket; Fig. 2 is a side view of the same; Fig. 3 is a transverse vertical section on the line 3—3 of Fig. 2; Fig. 4 is a view of the bucket showing the same diagrammatically in operation in full lines, the bucket being carried or transported in dash lines, and the same being dumped in dot and dash lines; Fig. 5 is a plan view of the devices covered by Fig. 4; Fig. 6 is a diagrammatic side elevation of a slightly modified form of bucket and a modified arrangement of supporting and operating mechanism; Fig. 7 is a like view of a similar form of bucket and a different arrangement of operating devices, and Fig. 7^a is a detail of certain tripping mechanism hereinafter described.

Throughout the following detail description and on the several figures of the drawings similar parts are referred to by like reference characters.

Referring particularly to the detail views, the numeral 10 illustrates a cradle or frame provided with a front shaft 11 and a rear shaft 12 on which are mounted supporting wheels 13 maintained in rolling contact with track rails or cables 14 by means of shoes or rollers 15 mounted upon the cradle. The track cables 14 are anchored at their rear end at any suitable distant point, and are adapted to be tightened by any suitable mechanism so as to lift the bucket clear of the ground for transportation and dumping purposes. The means herein shown for the purpose of tightening the track cables consists of a pair of pulley blocks 16 to the upper one of which is connected a cable 17

which is mounted upon a drum 18 under the control of the engineer.

The scoop portion 19 of the bucket is mounted within the cradle 10 and is pivoted thereto on pivots 20 near its front end so that under ordinary conditions as when under transportation the body of the scoop will be carried in the position indicated in dash lines in Fig. 2, the rear portion of the scoop being provided with one or more hooks 21 adapted to engage over the axle 12. One or more draft beams 22 are rigidly connected in any suitable manner to the front portion of the scoop and hence bear a certain definite angular relation to the digging edge 23 thereof, the arrangement being such that the digging edge or points of the scoop will always be sure to dig into the earth when the bucket is lowered to filling position. Any suitable means may be provided to prevent the scoop from digging too deep or being overloaded, and to this end I have shown at 24 a cross plate or member carried by the beams 22, which when the scoop becomes filled will cause the same to be thrown out of digging position. When the scoop is being filled by draft on the ropes 25 and beams 22, the excess of dirt which gathers in front of the cutting edge 23, after the scoop is full, will form a hummock, which will throw the cutting edge out of cutting engagement by reason of the plate 24 bearing down upon and over said hummock. One or more draft cables 25 are connected to the aforesaid beams 22 and extend thence forwardly over any suitable direction pulleys 26 to any suitable form of power drum 27.

As indicated in Fig. 4 the bucket will be drawn toward the power station by direct operation of the cables 25 until it becomes loaded, at which time or immediately thereafter the supporting cables 14 will be tightened to lift the same out of contact with the ground, and then the cables 25 will be slackened, permitting the scoop to assume the carrying position indicated in dash lines in Figs. 2 and 4. One or more tail ropes 28 are connected to the rear portion of the bucket cradle 10 and extend thence rearwardly over any suitably located direction pulleys 29, thence forwardly to and over pulleys 30 to another power drum 31 with-

in reach of the engineer. By operation of this last mentioned drum the tail ropes 28 will cause the bucket and its load to be conveyed rearwardly over the point of deposit where the scoop may be tilted by any suitable mechanism. The scoop may be provided with an upwardly projecting tail-piece 32 which may consist of a pair of plates secured to the frame-work of the scoop and converging at their upper end where a roller 33 may be mounted, said roller being adapted to travel along a trip cable 34 anchored at one end and provided at its other end with a tension weight 35. Said cable 34 may be provided with a stop button 36 adapted to be placed at any point where it is desired to tilt and dump the scoop. When the bucket and its load are drawn rearwardly the tailpiece 32 will engage the button 36 and a continued pull upon the tail ropes 28 will cause the scoop to be lifted and tilted as shown in dot and dash lines in Fig. 4. The scoop being pivoted eccentrically it will automatically right itself when permitted to go forwardly again to the loading position.

The supporting and operating devices of this present invention are adapted for a great flexibility of use both as to adjustment or setting along the lines of the excavation or transversely thereto. As shown in Figs. 4 and 5 the power platform 37 is mounted upon a set of trucks 38 movable along a pair of track rails 39, and the anchor tower 40 is likewise mounted upon trucks 38' movable along track rails 39', parallel to the tracks 39 whereby the power tower 37 and the anchor tower 40 may be shifted in unison transversely to the line of excavation without variation in the lengths of the various cables. For this purpose an auxiliary motor may be connected up to both of the aforesaid sets of trucks, said motor being under the direct control of the engineer on the power station 37. Each pair of rails 39 or 39' and the devices supported thereon are mounted upon trucks 41 movable parallel to the line of excavation on track rails 42. Said movement of the trucks 41 may be effected by any suitable means either individually or together.

In Fig. 6 is shown an arrangement quite analogous to that hereinbefore described in that the cradle 10 is supported upon track lines or cables 14 and is movable toward the power station by means of cables 25 for filling and conveying purposes. The power mechanism, however, is mounted upon a barge 37' from which extends rearwardly a boom 40' which corresponds to the aforesaid anchor tower 40 to which the track cables are connected and over which the tail ropes 28 operate. The dumping is effected in this form of the invention in a slightly different manner by the provision

of a yoke 43 suitably arranged so as to engage over the tail-piece 32' of the scoop. The yoke by engagement with the tail-piece will cause the scoop to tilt as indicated in dotted lines in Fig. 6 upon permitting the draft cables 25 to slacken, and a continued reverse movement of the bucket will completely dump the contents and cause the tail-piece 32' to automatically release itself from the yoke ready for a succeeding operation.

In the form shown in Fig. 7 the construction and operation of the bucket are practically the same as in Fig. 6, but the power tower 37^a is indicated as being substantially stationary and likewise the anchor tower 40^a is fixed on its own support.

Fig. 7^a shows the manner of mounting and supporting the yoke 43, the same being shown as carried by a trolley 43^a adjustable along the track cables 14, and secured at any desired position of adjustment by means of a tail rope 43^b which may be anchored at any suitable point on the adjacent tower.

I claim:

1. In an excavator, a cradle, a pair of laterally spaced cables on which said cradle is movably mounted, means to vary the tension on said cables, a scoop pivoted near its front edge in said cradle, means to limit the downward pivotal movement of the scoop in the cradle, means connected to the scoop for the purpose of filling the same and conveying it with the cradle along the supporting cables, and means to cause the scoop to swing upwardly and forwardly with respect to its pivotal connection with the cradle for dumping.

2. In an excavator, the combination of a cradle, means to support the cradle at varying elevations, a scoop carried by the cradle, means carried by the scoop to cooperate with the cradle to limit the downward movement of the scoop, draft means rigidly secured to the scoop and bearing thereto a fixed angular relation with respect to the cutting edge of the scoop, power means connected to said draft means for the purpose of filling the scoop, a tail-piece rigidly secured to another portion of the scoop, and means cooperating with said tail-piece for the purpose of lifting the scoop to dump its contents.

3. In an excavator, the combination of a cradle comprising a pair of side frames and a pair of transverse axles, a pair of supporting cables, means to secure the cradle from displacement on said cables, a scoop pivoted near its front edge on or within said cradle, means connected to the rear portion of the scoop and cooperating with one of said axles to limit the swinging movement of the scoop, draft means connected to the front portion of the scoop,

and a tail-piece for dumping purposes connected to the rear portion of the scoop.

4. In an excavator, the combination of a support, a cradle thereon, a scoop pivoted near one end in said cradle, means connected to the other end of the scoop to limit its downward movement in the cradle, a tail-piece rigidly connected to the scoop and extending upwardly therefrom, and means spaced from the cradle supporting means and adapted to cooperate with said tail-piece to cause the scoop to be lifted with respect to the cradle for dumping purposes.

5. In an excavator, the combination of a support, a cradle movable along said support, a scoop pivoted to said cradle, means to limit the downward swinging movement of the scoop with respect to the cradle, and means to dump the scoop while in motion, said dumping means including a rigid member extending upwardly from the scoop and a member spaced from the supporting means and adapted to engage said rigid

member and momentarily stop its movement, causing the scoop to swing upwardly with respect to the cradle.

6. In an excavator, the combination of a support comprising a pair of laterally spaced tracks, a cradle movable along said tracks, a scoop pivoted near one end to said cradle, means to limit the downward swinging movement of the scoop, and means to lift the scoop for dumping purposes with respect to the cradle, said dumping means including a member projecting from the scoop, a trolley mounted upon said supporting tracks, and a bail pivoted to the trolley and adapted to engage said scoop member, substantially as set forth.

In testimony whereof I have hereunto set my hand.

ALVAH D. HADSEL.

Witnesses:

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A. L. MOORE.