

W. G. LAWRENCE.
EXCAVATOR.
APPLICATION FILED FEB. 9, 1910.

992,679.

Patented May 16, 1911.

2 SHEETS—SHEET 1.

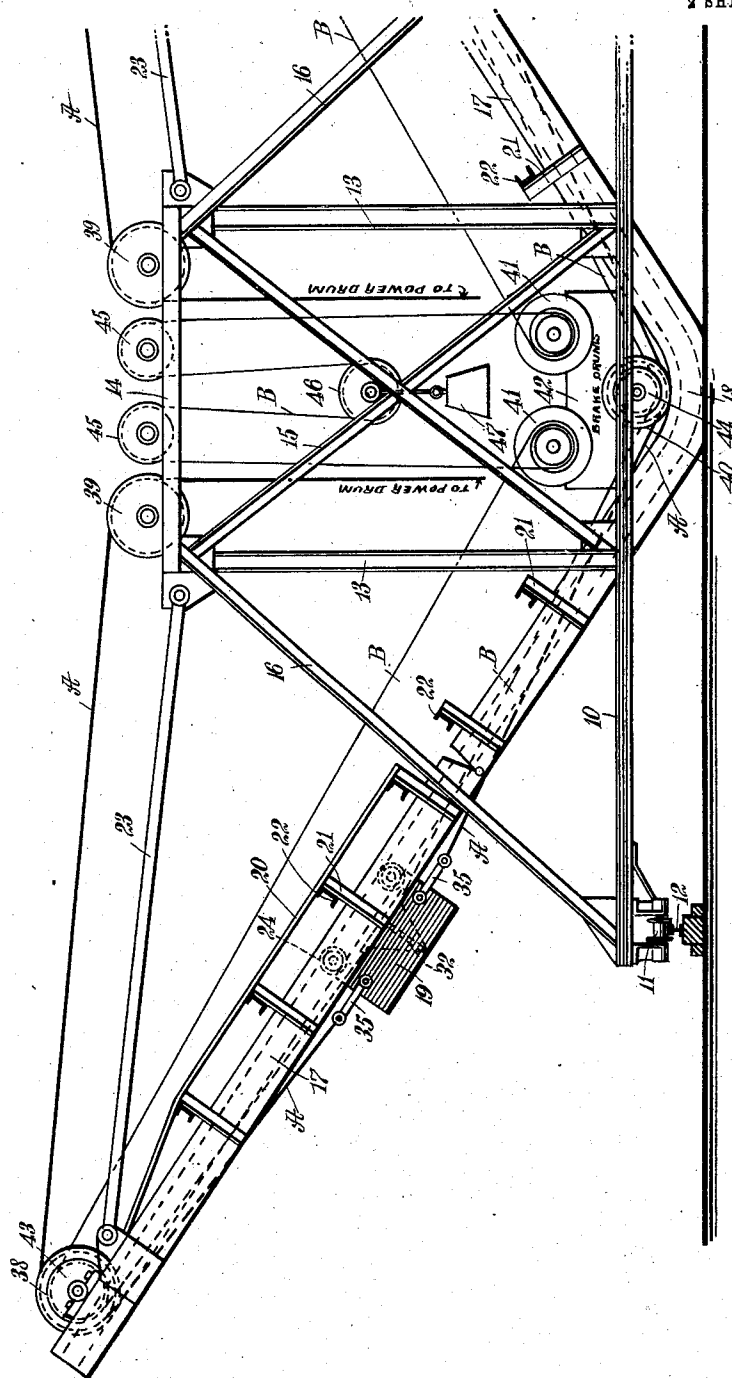


Fig. 1

WITNESSES:

John A. Thompson
John K. Brachvogel

INVENTOR

William G. Lawrence

BY

Munn & Co.

ATTORNEYS

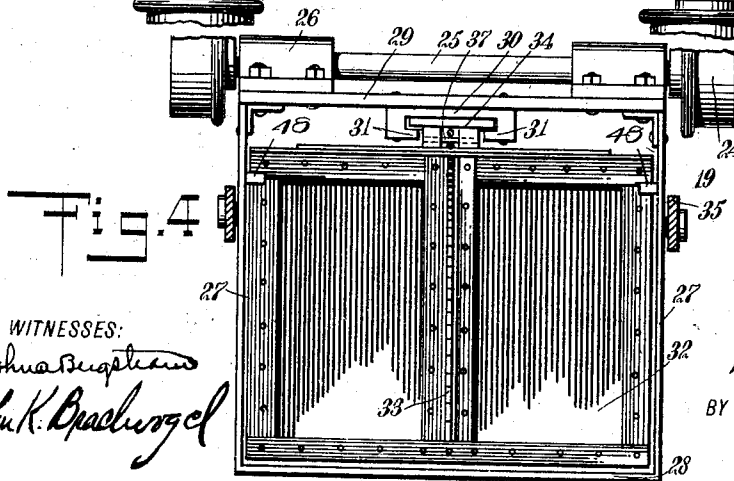
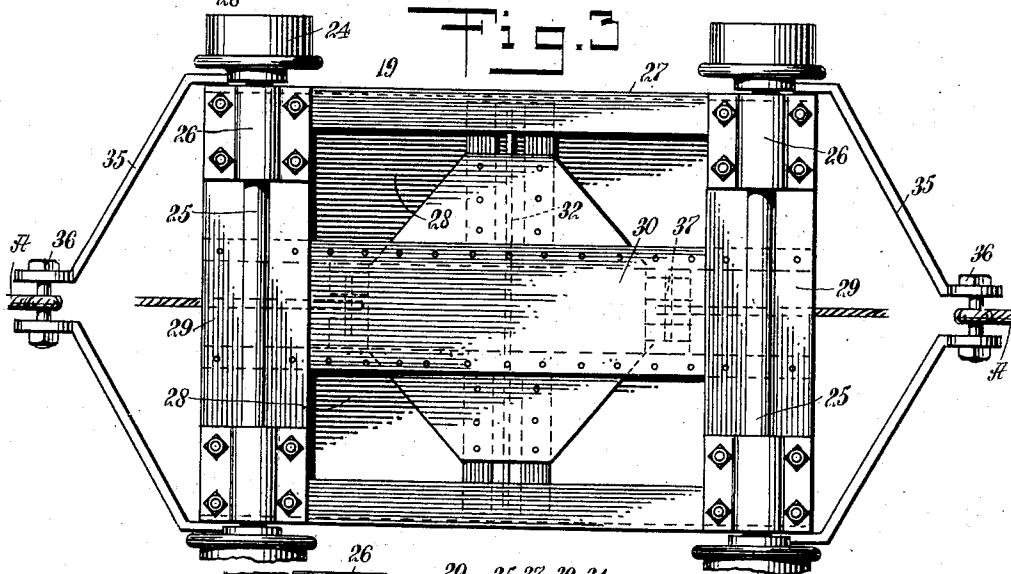
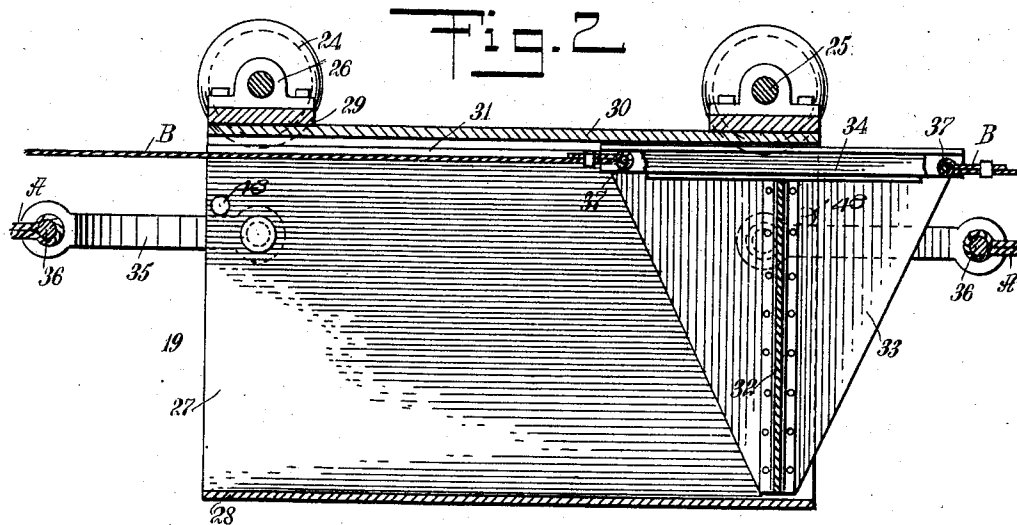
W. G. LAWRENCE.
EXCAVATOR.

APPLICATION FILED FEB. 9, 1910.

Patented May 16, 1911.

2 SHEETS-SHEET 2.

992,679.



WITNESSES:

John A. Bingham
John K. Drachmeyer

INVENTOR
William G. Lawrence

BY *Mum & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM GRAY LAWRENCE, OF CRESCENT CITY, ILLINOIS, ASSIGNOR OF ONE-HALF TO
JOHN C. VANATTA, OF BROOKSTON, INDIANA.

EXCAVATOR.

992,679.

Specification of Letters Patent.

Patented May 16, 1911.

Application filed February 9, 1910. Serial No. 542,852.

To all whom it may concern:

Be it known that I, WILLIAM G. LAWRENCE, a citizen of the United States, and a resident of Crescent City, in the county of Iroquois and State of Illinois, have invented a new and Improved Excavator, of which the following is a full, clear, and exact description.

This invention relates to excavators for digging ditches and the like, and has reference more particularly to an excavator including a bucket for receiving material to be excavated, the bucket having associated therewith a member for emptying the bucket, means for holding the member against movement, and means for moving the bucket so that the contents thereof can be discharged when the member is held fixed.

The object of the invention is to provide a simple and economic excavator, in which a bucket travels alternately up and down oppositely inclined tracks arranged transversely of the line of travel of the excavator, and adapted to penetrate the ground at certain points of its movement, so that it can be filled with the material to be excavated; which can be easily manipulated, and which can be operated to discharge the contents of the bucket at any desired point of the travel of the bucket up and down the inclines.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a front elevation of an embodiment of my invention, parts of the excavator being broken away; Fig. 2 is an enlarged, longitudinal section of the bucket of the excavator; Fig. 3 is a plan view of the bucket; and Fig. 4 is an end elevation of the bucket showing a part in cross section.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that it consists in the improvement of a form of excavator in which a bucket travels back and forth transversely of the bodily travel of the excavator, the bucket being arranged to move along oppo-

sitely inclined tracks which are connected at the ends adjacent to the ground, so that when the bucket moves from one track to the other it will be forced into the ground and will be filled with the material to be excavated, means being provided for discharging the contents of the bucket after it is filled.

My invention resides, as will appear hereinafter, in the provision of means for discharging the bucket at any desired point of the inclined tracks, so that the material can be dumped at either side of the excavation, and at any desired distance therefrom within the range of the excavator.

Certain of the details of construction necessarily form no part of the invention, and can be varied with individual preference or special conditions, without departing from the underlying spirit of the invention.

Referring more particularly to the drawings, I provide a main excavator frame 10, having supporting wheels or rollers 11, by means of which it is arranged to travel upon suitable track rails 12, preferably temporarily located along the line of the ditch or other excavation to be formed. The frame 10 has uprights 13, connected at the upper ends by transverse beams 14, and having therebetween crossed braces 15. Inclined struts or braces 16, extend from the outer portions of the frame 10 to the upper extremities of the uprights 13.

Extending upwardly and outwardly from the middle of the frame 10 are inclined tracks 17, which at their inner ends are connected by a curved part 18, so that the bucket 19 can easily travel down one track 17, over the connecting part 18, and so to the other track 17. The tracks are of any suitable form and preferably have strengthening trusses 20, extending longitudinally thereof and arranged over struts 21, connected by cross members 22. Tie pieces 23 are secured near the upper ends of the uprights 13, and extend to the outer ends of the tracks 17, serving to hold these in the normal, inclined positions shown in Fig. 1.

The bucket has supporting wheels or rollers 24, which travel over the tracks and which are mounted upon axles 25, journaled in bearings 26 of the bucket. The latter comprises sides 27 and a bottom 28, the ends of the bucket being open. The bearings 26

are mounted upon cross-pieces 29, extending over the top of the bucket and having mounted at the under sides thereof a longitudinal channel 30, having inwardly disposed flanges 31. A suitably braced and strengthened wall or partition 32, has at the opposite sides thereof, inclined lateral wings 33, to the upper edges of which is secured a head 34 arranged to slide within the channel 30, and laterally extended to engage the flanges 31, as is shown most clearly in Fig. 4. At each end of the bucket, pivotally secured at the sides, is a bail 35, having a shackle 36, at which is secured an end of the haul rope A. At the extremities of the head 34 of the partition, are fastened the ends of a discharge rope B, by means of pins 37 or in any other suitable manner.

The haul rope A passes over sheaves 38 journaled at the outer ends of the tracks 17, and then passes over corresponding sheaves or drums 39 journaled upon the transverse frame beams 14, the rope passing thence to a suitable power drum (not shown), which is adapted to be actuated in any suitable manner. An idler sheave or drum 40, is mounted above the connecting section 18 and the haul rope passes thereunder. I provide a pair of brake drums 41, mounted upon a suitable frame 42, carried by the frame 10 and having the discharge rope passing one or more times around them. The discharge rope passes around guide pulleys 43, journaled at the outer ends of the tracks 17 and under guide pulleys 44, above the connecting track section 18. The transverse frame beams 14 have guide pulleys 45, over which the discharge rope passes upwardly from the brake drums, and a loose weight pulley 46, having a counterweight 47 connected therewith, is arranged under the guide pulleys 45, and has the discharge rope pass around it. This pulley 46 with its weight 47 tends to maintain the discharge rope taut so that the brake drums are at all times operative.

The operation of the excavator is as follows: By suitably driving the power drum, the bucket is caused to travel down one of the track sections, is forced through the ground, carrying with it the material to be excavated, and then travels upwardly upon the other track section. At a suitable point of the latter track section the load of the bucket is discharged by suitably operating one of the brake drums to hold the partition 32 fixed, while the bucket itself is propelled in the opposite direction, by means of the haul rope. This causes the bucket to move longitudinally with respect to the partition to force out the material therein. The movement of the bucket is continued so that it again scoops up a load of material from the ground and passes to the other track section where it is discharged in a similar

manner. In this way too, it will be understood, the partition is always arranged at that end of the bucket which does not enter the ground first. Suitable stops 48 are provided at the ends of the bucket to limit the movement of the partition.

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

1. An excavator, comprising a movable bucket, a partition in said bucket movable longitudinally thereof, a haul rope for moving said bucket, a rope controlling said partition, and means for operating said last-mentioned rope to hold said partition fixed while said bucket continues to move.

2. An excavator, comprising a track, a bucket arranged to travel along said track, a haul rope for causing said bucket to travel in opposite directions, a discharging member movable in said bucket, and a rope controlling said discharging member and operable to hold said member fixed at any point of the travel of said bucket.

3. An excavator, comprising a track, a bucket arranged to travel along said track, a haul rope controlling said bucket and operable to advance the same along said track, a slidable partition in said bucket, said bucket being open at the ends, a rope controlling said partition, and a brake controlling said last-mentioned rope, so that said partition can be held fixed at any point of the travel of said bucket.

4. An excavator, comprising a frame arranged to travel, a track carried by said frame and having oppositely inclined sections, a bucket arranged to travel upon said track and pass from one of said sections to the other of said sections, guide pulleys mounted adjacent to said track, a haul rope passing around said pulleys and connected with said bucket, said haul rope being operable to advance said bucket in opposite directions upon said track, said bucket being open at the ends, a partition slidably mounted in said bucket and movable longitudinally thereof, a discharge rope connected to said partition, guide pulleys mounted upon said track and said frame and having said discharge rope pass around the same, and a brake drum controlling said discharge rope, whereby said partition can be held fixed at any desired point of the travel of said bucket.

5. An excavator, comprising a frame arranged to travel, a track carried by said frame and having oppositely inclined sections, a bucket arranged to travel upon said track and pass from one of said sections to the other of said sections, guide pulleys mounted adjacent to said track, a haul rope passing around said pulleys and connected with said bucket, said haul rope being operable to advance said bucket in opposite di-

reactions upon said track, said bucket being open at the ends, a partition slidably mounted in said bucket and movable longitudinally thereof, a discharge rope connected to said partition, guide pulleys mounted upon said track and said frame and having said discharge rope passing around the same, a brake drum controlling said discharge rope, whereby said partition can be held fixed at any desired point of the

travel of said bucket, and means for maintaining said discharge rope taut.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM GRAY LAWRENCE.

Witnesses:

OTTO F. NIGHTINGALE,
GRACE E. DAVIS.

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