Sheet 1-2 Sheets.

W. Y. Singleton.

Excavator.

No. 4,535. Patented May 28, 1846.

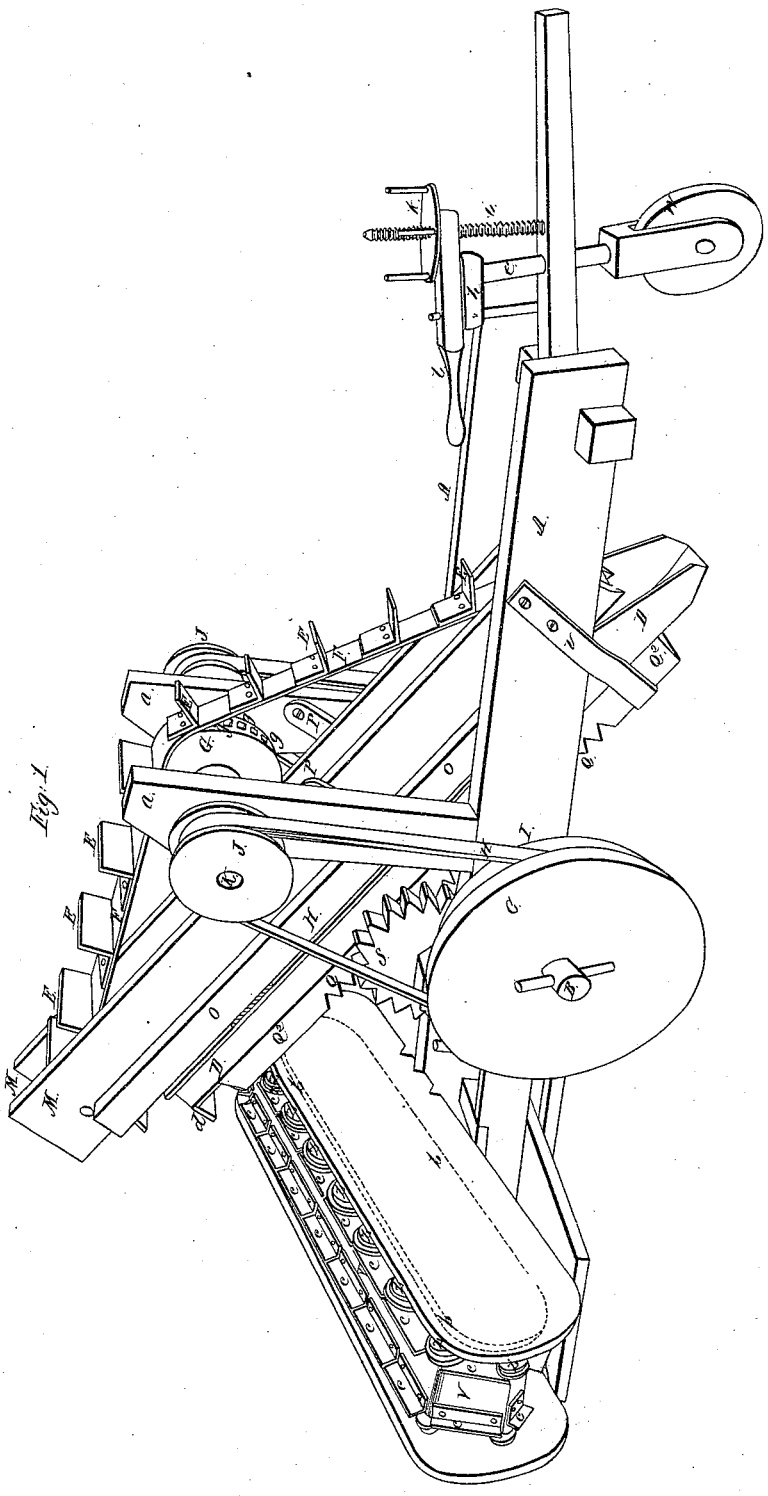

Fig. 1.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

Sheet 2-2, Sheets.

W. Y. Singleton.

Excavator.

No. 4,635. Patented May 28, 1846.

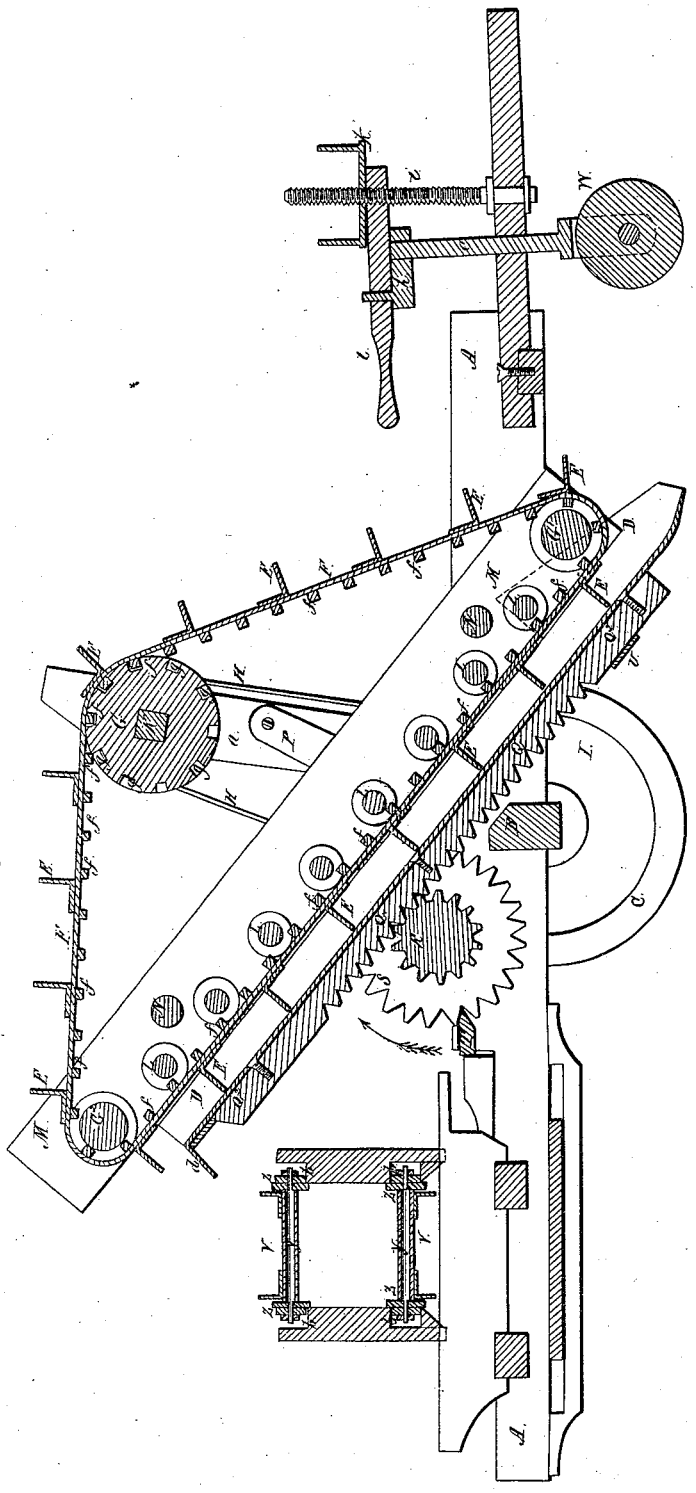

Fig. 2.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

W. Y. SINGLETON, OF SPRINGFIELD, ILLINOIS.

DITCHING-MACHINE.

Specification of Letters Patent No. 4,535, dated May 28, 1846.

To all whom it may concern:

Be it known that I, WILLIAM Y. SINGLETON, of Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Machine for Ditching and Embanking, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification, of which—

Figure 1 is a perspective view of the machine; Fig. 2 is a vertical longitudinal section.

I construct a suitable frame A composed of horizontal parallel longitudinal timbers united by transverse connecting timbers mortised and tenoned into the same, or otherwise secured; said frame being placed upon a horizontal transverse axle B supported by two common cart wheels C for carrying the frame and its appendages hereafter described. In this frame I arrange an inclined trough D whose lower end, which comes in contact with the ground, is made (in its cross section) the shape of the required ditch to be cut, and sufficiently sharp to cut the ground, said trough being designed to receive the earth when cut. The earth is conveyed through this trough by a number of right angled conveyers E fastened to an endless revolving belt F (turning over three revolving drums G G′ G² propelled by said belt F and bands H, H, leading around pulleys I on the axle B and around pulleys J on the outer ends of the axle K of the drum G. *f* are projections or cogs on the face of the band next the periphery of the drum designed to fit into corresponding depressions *g*, in the drum to prevent the band from slipping. The aforesaid inclined trough is extended in length until its upper end reaches a level above an endless train of cars, onto which the earth from it is directed from said trough by dropping the bottom so as to form a chute *d*.

The band F to which the conveyers E are fastened in passing through the trough is retained in a parallel line with the bottom of the trough D and prevented from rising (by the pressure of the earth in the trough) by a number of guide rollers L arranged so as to touch the band and keep it in its place having a circular groove in the middle of the same to allow the cogs *f* on the strap to pass through without touching the rollers. The axles of these guide rollers and of the drums G′ G² turn in two inclined parallel sideboards or cheeks M held together by transverse parallel rounds N, let into the same. On the outside of each of these cheeks is fastened an inclined rib or projection *o*, to which, and the bottom edges of the cheeks M, the aforesaid trough is bolted. This rib *o* and a button *p* turning on a pin inserted into the upright *a* of the frame when brought against the rib serves to hold the excavating apparatus firmly during the operation. As the aforesaid excavating trough is designed to cut the ditch by degrees and consequently must have its cutting edge let down to a lower level for each cut, it is provided with a rack Q formed on a bar Q² fastened longitudinally to the bottom of the trough and geared to a pinion R on the axle of two toothed wheels S by which the pinion is turned for raising and lowering the trough and holding it at the desired position by means of a lock bar T connected to the frame and brought against the teeth of the wheels S. When it is desired to depress the cutter to a lower level the buttons P must be turned, the lock bar T removed and the toothed wheels T turned in the direction of the arrow as far as desired. The lock bar is then replaced in its former position against the teeth of the wheels S and the buttons turned down hard against the ribs which will hold the trough firmly in the required position. When the trough D descends the drums G′ G² also descend.

The lower end of the trough is held firmly in the desired position by a strong stirrup V, fastened to the frame and embracing the trough and rack bar—the latter resting firmly in said stirrup.

As the earth is cut by the lower end of the aforesaid inclined trough it is immediately struck by the revolving right angled conveyers E and conveyed up the inclined trough to the upper end thereof, from whence it descends over the inclined chute *d* to an inclined endless train of cars V arranged transversely and at right angles to the frame A, by which the earth is conveyed to its place of destination for forming the embankment or other purposes. This endless train of cars is constructed in the following manner. It consists of an endless belt and passing around two endless inclined planes or ways *b* placed within a suitable frame arranged upon the main frame A and at right angles thereto and made movable thereon in order to accommodate the posi-

tion of the train of cars and the change of position of the conveyers. To this endless belt are fastened a series of parallel axles *y* each of which carrying a pair of flanged wheels *z* which turn upon and against the said endless ways *b* (represented in Fig. 1 by dotted lines).

To the portion of the endless belt over each axle are fastened a pair of right angled plates *c* forming sides for the cars for holding the earth upon the belt until discharged therefrom in passing around the curved ends of the ways.

The gravity of the earth discharged from the trough upon the endless train of cars causes them to descend over the ways and in turning over and against the curved ends (which are brought over the place of deposit) they discharge their loads and return empty along the under sides of the ways *b* and around the upper, or curved ends thereof, to receive the earth from the conveyers.

The machine is guided in its progress forward by a wheel *w* and axle *o* and crank *r* and regulated, as to depth of cutting, by a screw *i* nut *k* and lever *l*. By turning the handle *l* to the right or left the steering wheel *w* is also turned; and by turning the nut *k* to the right on the top of the lever *l* the screw is raised which also raises the front end of the frame and the cutter of the inclined trough.

The cutter may form part of the conveying trough as above described, or it may be made in a separate piece and be attached to the trough.

The machine may be propelled by animal or other power. When horses or oxen are used they are geared to the front part of the frame, or to any convenient place.

What I claim as my invention and which I desire to secure by Letters Patent is—

The combination of the adjustable inclined trough and excavator and revolving endless belt of conveyers working thereon for cutting and conveying the earth arranged and operated in the manner before described, or other mode substantially the same, with the carriage for supporting and carrying the same.

W. Y. SINGLETON.

Witnesses:
WM. P. ELLIOT,
ALBERT E. H. JOHNSON.