J. H. Snyder.

Excavator.

No. 47,229. Patented Apr. 11, 1865.

Fig. 1.

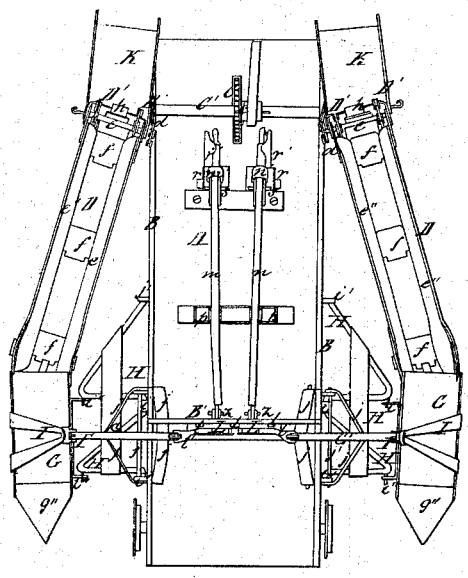


Fig. 2.

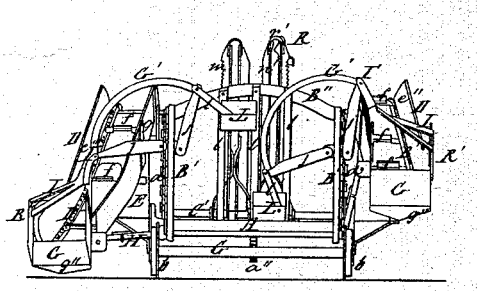


Fig. 3.

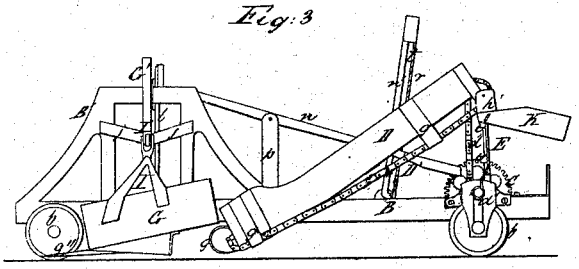
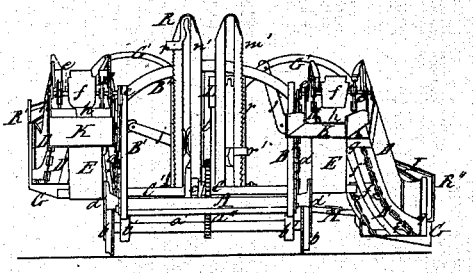


Fig. 4.



Witnesses.

W. H. Burridge

A. W. McClellans

Inventor.

J. H. Snyder

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

UNITED STATES PATENT OFFICE.

J. H. SNYDER, OF KILLBUCK, ILLINOIS.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. 47,229, dated April 11, 1865.

To all whom it may concern:

Be it known that I, J. H. SNYDER, of Killbuck, in the county of Ogle and State of Illinois, have invented certain new and useful Improvements in Ditching-Machines; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan view of the machine. Fig. 2 is an end elevation. Fig. 3 is a side elevation. Fig. 4 is an elevation of the end opposite from Fig. 2.

Like letters of reference indicate like parts in the different views.

My improvement relates to a ditching-machine constructed and operating as hereinafter described.

In the figures, A represents the platform of the machine, secured in a metallic frame, B, on the sides to which the wheels *b* are connected, by journal boxes *b'*, extending down from the frame, in which the shafts *a a'* of the wheels rest and turn. On the shaft *a'*, at the center, is secured a pinion, *a''*, that works in a gear-wheel, C, on a shaft, C'. On one side of this gear-wheel is a clutch, *c*, by which it can be thrown in and out of gear. The shaft C' passes through journal boxes on the side frames, and on the outer ends are small chain-wheels that are connected by chains *d* to similar wheels on a shaft, *e*, in the upper ends of the chutes D D, by which the endless chains D' are carried round. Projecting outward from the side frames over the chain-wheels on the ends of the shaft C' are brackets *d'*, that support the upper ends of the chutes by means of standards E, the standards being jointed to the brackets, so that they can be adjusted to suit the position of the chutes. The chutes consist of metallic troughs formed with a bottom and side pieces, as shown in Fig. 3, supported in an inclined position, as represented. The inside pieces, *e''*, of the sides are inclined outward, forming a shelter to protect the chains D' from dirt and gravel. The endless chains D' pass round chain-wheels at the upper and lower ends of the chutes, and to the links of the chains are pivoted carriers *f*, by a rod, near one end of the carriers, so that the other end will rest down and slide along on the bottom of the chutes.

f' (seen in Fig. 4) is a guide extending along under the chutes in the same plane of the chains, being attached to frames *g'*, secured to the chutes. This guide turns downward at the upper end, and curves round upward at the lower end, forming a spring, as seen at *g'*. Under the guide at the upper end there is a spring, *h*.

h' is a cross tree hung on the shaft *e* of the chain-wheels, resting on the standards E, above the springs, being connected to the standards by means of a rod, *o*, Fig. 3, attached to the cross-tree, and passing down through lugs *i* on the inner side of the standard, making an adjustable connection, by which, together with the lower end of the standard, being jointed to the bracket *d'*, as described, this end of the chute can be adapted to any lateral or vertical position in which the chutes and scrapers may be adjusted. The spring *h* is connected to the rod underneath the cross-tree, and projects round under the end of the guide *f'*, keeping it adjusted so that as the carriers are brought round they come in contact with it and are turned down flat as they are carried down under the chutes, until they come to the lower end, when, by means of the curved spring *g'*, the carriers are turned down on the bottom of the chutes, so as to form shelves or carriers to receive the dirt.

G is a scraper on each side attached to the lower end of the chute. The scrapers are hung to the side frames by means of adjustable links H, jointed in lugs *i'* on the frame, the other sides being pivoted to lugs on the inner sides of the scrapers at *i''*. The bail I of each scraper is hung to a curved lever, G', at I'. This lever is connected to the upright part B' of the side frame by means of arms or braces *j j* on each side of the frame, pivoted to lugs projecting from the frame by rods *j'*. (Seen in Fig. 1.) Between the upright side pieces is a cross-piece, B'', from which extend down into the platform guides *l*, for slides L L to move on, that are grooved out on the side edges for that purpose. These slides are connected to the curved levers G' by arms *l'*, as represented. To the slides are attached levers *m n* at *z z*, that are pivoted to adjustable standards *p*. The rear ends of the levers pass through guides *m' n'*, that are jointed or pivoted to the platform. The levers are kept in place in relation to the guides by pins *s*, (seen in Fig. 1,)

that move in slots *t* in the sides of the guides. On the guides are ratchets *r*, in which a spring-catch, *r*, connected to the handle of the levers, works, by which the levers are retained in any position, holding the chutes and scrapers as they may be adjusted firmly in place. By releasing the spring-catch and elevating the lever *n* into the position seen at R in Figs. 2 and 4, the levers turning on adjustable standards move down the slide L at the other end of the lever in the guides *l'*, that turns the curved lever G' round into the position represented, which, by means of the adjustable link H and connection of the scraper with the curved lever, draws up and elevates the chute and scraper into the position as seen at R', which can be let down more or less, as may be required, by reversing the motion of the lever *n* until in the position shown at R'' of the chute and scraper at the other side. The rear end of the chutes is adjusted to any position they can be placed in by means of the connection of the cross-tree with the standard E, and also of the standard E with the bracket, as before stated. The guides *m' n'* have to be jointed or pivoted to the platform, so that they will turn, for as the levers *m n* are operated they describe an arc of a circle, and the guides must conform to it.

K K are boxes connected to the rear end of the chutes for the purpose of conveying the dirt into a car for receiving it.

In practical operation this machine is moved along on the railroad-track on the wheels *b*. As these wheels at the rear end turn, it revolves the pinion *a''*, turning the gear-wheel C, which, when adjusted into gear by means of the clutch, revolves the chain wheels on the shaft C', operating the endless chains D', which convey the carriers *f* round inside and below the chutes, as before described. The scrapers and chutes are adjusted laterally, and elevated more or less, in the manner before stated, according to the depth of the ditch, and when they are in the desired position, by moving the machine along, by having it attached to a locomotive or otherwise, the dirt is dug up by the scrapers, which are pointed in front at *g''*. From the scrapers the dirt and gravel pass onto the carriers, when they are drawn up to the top of the chutes by the endless chains, and are turned off into the boxes or conveyers K, from which they are discharged into a car for receiving them at the rear of the machine.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. The guides *m' n'*, spring-catches *r*, and levers *m n*, in combination with the adjustable standard *p*, and slides L, as and for the purpose set forth.

2. The curved levers G' and arms *j*, in combination with the scrapers G and links H, as and for the purpose set forth.

3. The standards E and cross-trees *h'*, in combination with the chutes D and scrapers G, as and for the purpose set forth.

4. The carriers *f*, guides *f'*, and spring *g'*, in combination with the chutes and scrapers, as and for the purpose set forth.

J. H. SNYDER.

Witnesses:

W. H. BURRIDGE,

A. W. MCCLELLAND.