3 Sheets--Sheet 1.

M. E. LASHER.

Excavator.

No. 161,524. Patented March 30, 1875.

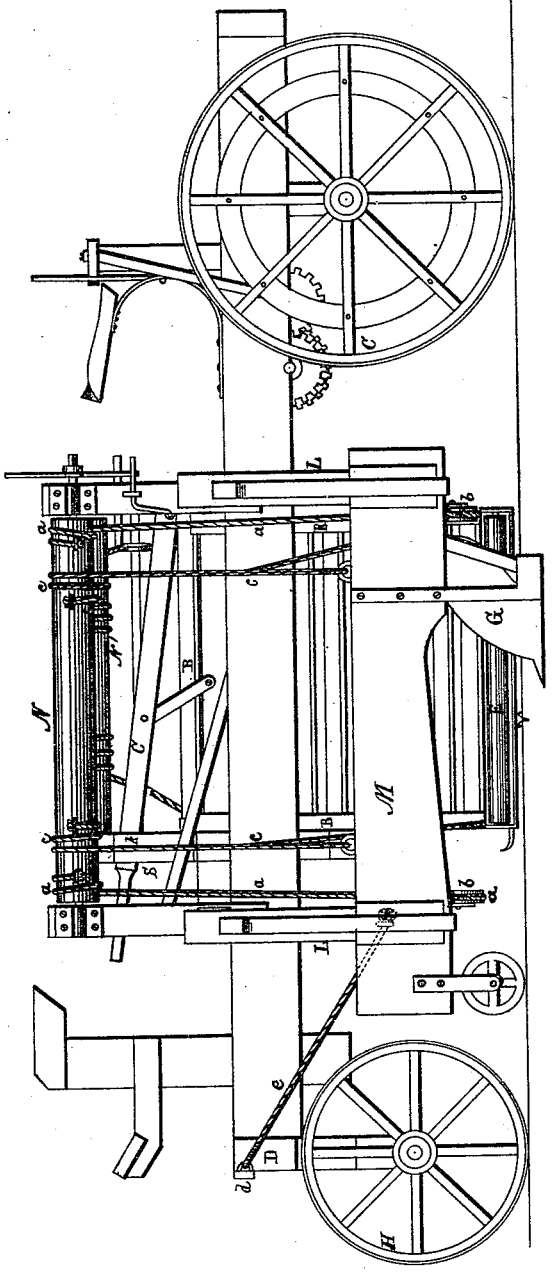

Fig. 1.

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3 Sheets--Sheet 2.

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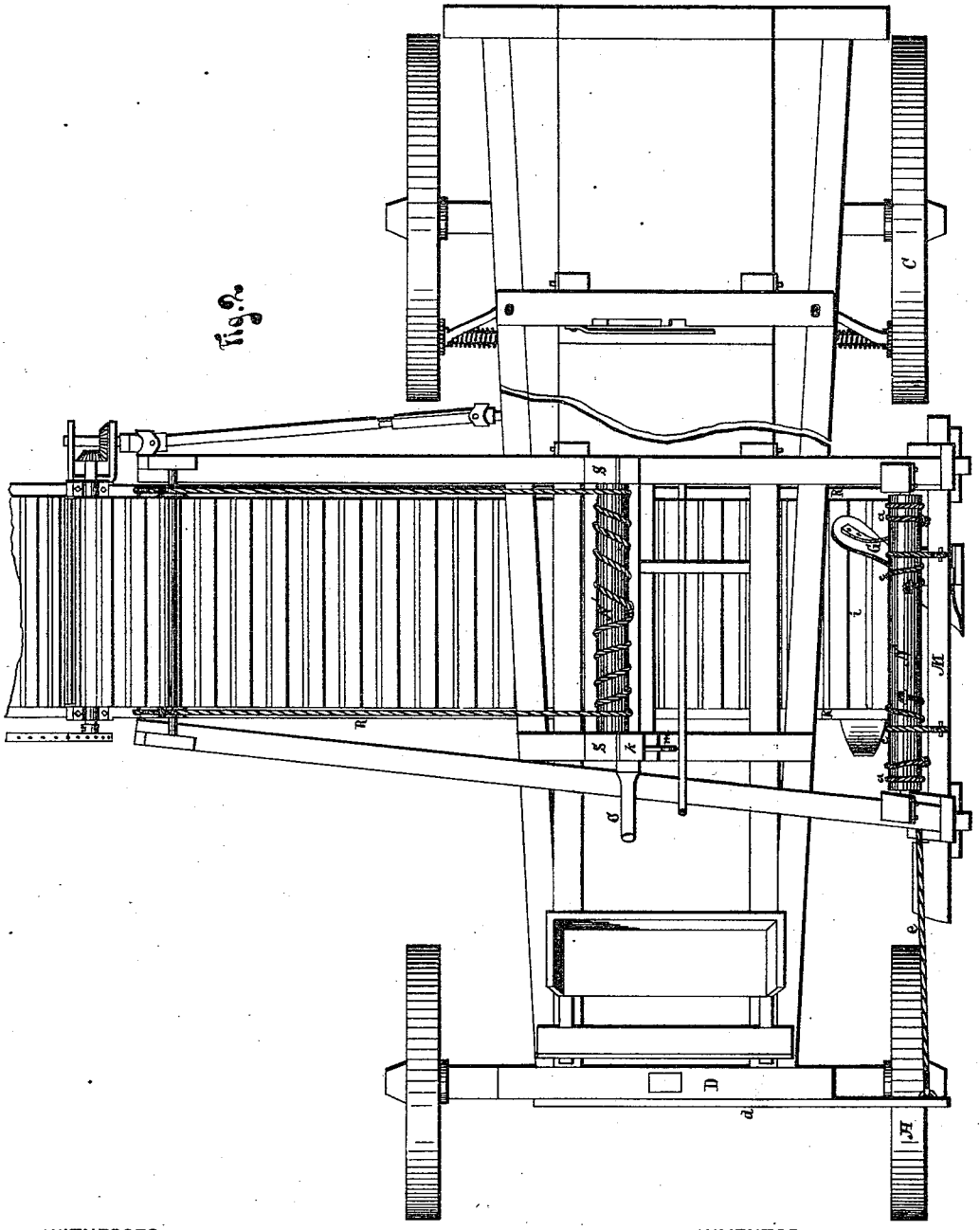
Fig. 2.



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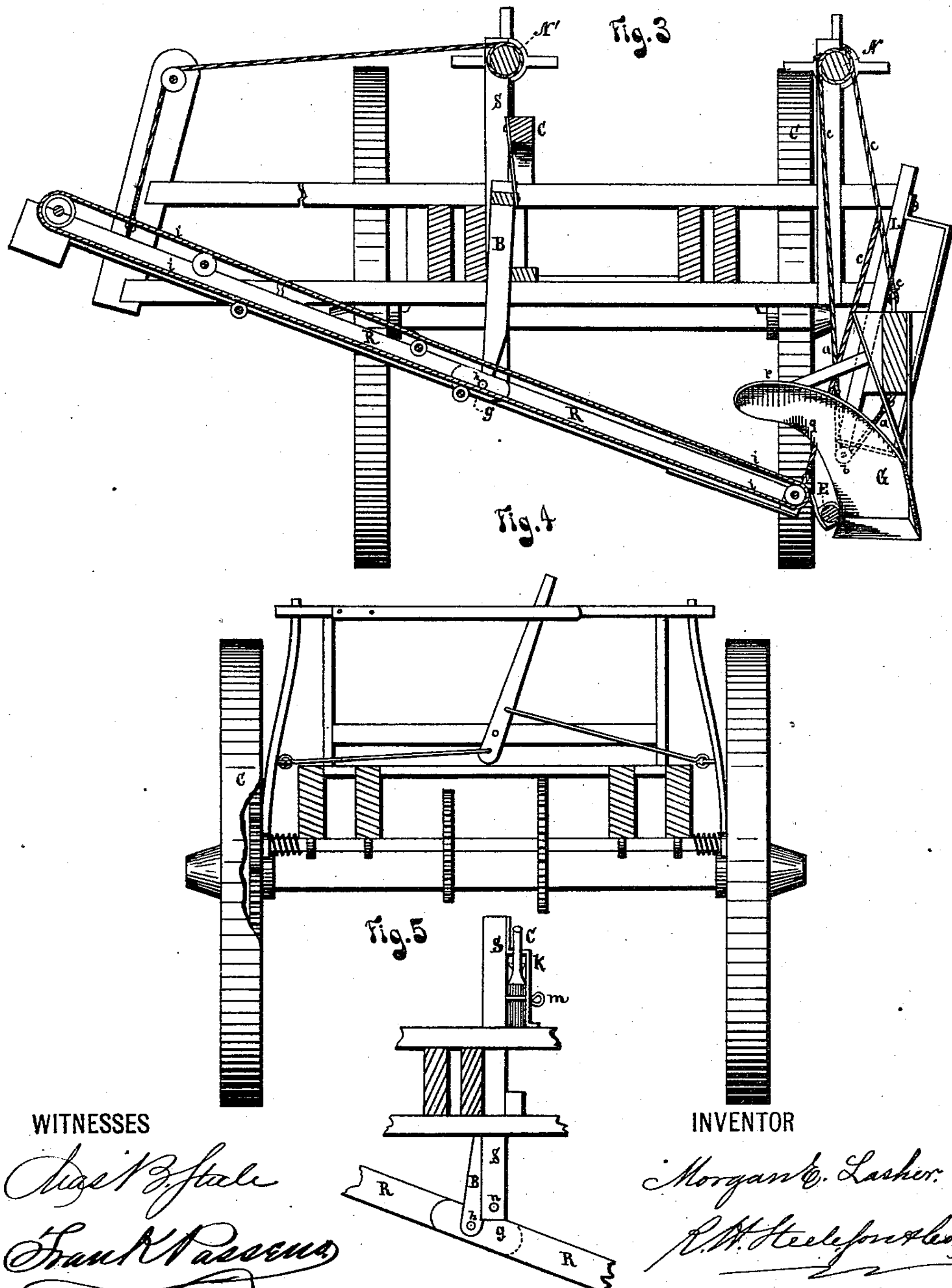

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UNITED STATES PATENT OFFICE.

MORGAN E. LASHER, OF CHAMPAIGN, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE F. BEARDSLEY, OF SAME PLACE.

IMPROVEMENT IN EXCAVATORS.

Specification forming part of Letters Patent No. **161,524**, dated March 30, 1875; application filed December 12, 1874.

To all whom it may concern:

Be it known that I, MORGAN E. LASHER, of Champaign, in the county of Champaign and State of Illinois, have invented a new and valuable Improvement in an Excavator; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my device, showing the ropes passing in contrary directions over the windlass, the roller at foot of apron, the front draft-rope, and the lever for raising the apron. Fig. 2 is a top view of the same devices. Fig. 3 is a cross-section, showing the devices for raising and lowering the plow and the apron.

My invention relates to additional improvements in a combined grading and ditching machine described in Letters Patent No. 150,767, granted to me May 12, 1874; which improvements consist essentially of the following features: ropes or chains attached to the under side of the plow-beam, and running under pulleys which are fastened to the lower ends of the guides, up and down which said plow-beam slides, and then over a windlass in a contrary direction to those which run over the same windlass from the top of said beam; a rope or chain stretched from the end of a bar fastened along the front of the head-block or bolster to the foot of the guide-standard near the front end of the plow-beam; a joint about one-third the distance from the lower end of the elevator-frame, by which, together with a lever, said elevator at said point can be raised or lowered; a revolving roller adjusted across the foot of the elevator between the plow and the elevator-apron; a downward curve or twist from the upper portion toward the rear edge of the mold-board, the plow hanging and operating outside of the wheels on the near side of the machine, all of which and their purposes are hereinafter more fully described and illustrated by the accompanying drawings, in which the same letters designate identical parts of my machine in the different figures, respectively.

The letter *a* represents chains or their equivalents, each of which is attached to the under side of the plow-beam M, as shown, and after running each under its pulley *b*, which is suitably fastened as aforesaid, is wound over and secured to the windlass N in a contrary direction to the chains *c*, which run each over the same windlass from the top of said beam. These chains *a* serve to assist in drawing down the plow G, and in keeping it firmly and steadily in the earth while cutting its furrow.

A tough and stout wooden bar, *d*, is securely fastened along the front and upper edge of the head-block or bolster D, and made of such a length as to project beyond the end of said bolster, and over the near front wheel to a point directly in front of the end of the said plow-beam. To the outer end of said bar *d* is suitably attached one end of a strong chain, *e*, or its equivalent, which is stretched to and suitably secured upon the foot of one of the said guides L near the front end of the plow-beam. By said contrivance, not only the side draft is overcome and the draft brought directly to bear behind the team, but any violently jerking motion prevented.

About one-third of the distance from the lower end of the elevator-frame R, on each side, is formed an overlapped joint, *g*, as shown, said joints being pivoted upon a cross-bar or pin, *h*, passing through and projecting outside of each overlap; said projections serving also to connect and pivot said elevator-frame to the feet of the side pieces of the frame B, which slides up and down within the standards S of the windlass N′. The said frame B is raised and lowered at will by the lever C, moving within the guide-rod *k*, and kept at any desired point of elevation by the resting of said lever upon a check-pin, *m*, which is thrust through any one of the series of holes made up and down said guide-rod, for the purpose of thus supporting said lever, and consequently the said elevator-frame R. The elevation of said elevator-frame is also limited and checked by pins *n*, one of which projects inward from the foot of each of the said standards S and over the sides of the elevator-frame.

By the above contrivance for raising and lowering the elevator, its apron may be kept on an even incline from one end of the frame to the other, and also more easily and quickly bent in order to pass by any obstacle.

The letter E represents a suitable roller adjusted across the foot of the elevator-frame, between the plow and the elevator-apron, just over the steel cross-bar *v*, and revolved by any suitable means upon axial pins journaled in suitable ears, either upon the ends of the cross-bar *v* or upon the foot of said frame R. This revolving roller assists the plow to raise the excavated earth upon the apron, and also prevents said apron from being cut by the plow or any sharp obstructions.

The upper portion of the mold-board of the plow G is shaped with a downward spiral curve or twist from the front *p* toward the rear edge, at *q*, for the purpose of completely overturning the earth from the furrow upon the elevator-apron.

The plow G is also made to hang, as shown, and cut its furrow outside of the near side wheels of the machine, for the purpose of having all the wheels move over the excavation on an even plane, instead of having the near wheels above the others upon unfurrowed ground; therefore,

What I claim as my invention, and desire to secure by Letters Patent, as additional improvement to my excavator, patented as aforesaid, is—

1. The chains *a*, in combination with the plow-beam M, by means of the pulleys *b* and the windlass N, substantially as and for the purposes specified.

2. The projecting bar *d*, in combination with the chain *e* and the foot of the front guide-standard L.

3. The lever C, in combination with the elevator-frame R, by means of the overlap-joint *g*, the pivot bar or pin *h*, and the standards S, with the sliding frame B, the check-pin *m*, and the guide-rod *k*, substantially as and for the purposes specified.

4. The revolving roller E, in combination with the elevator-frame R, substantially as and for the purposes specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MORGAN E. LASHER.

Witnesses:
J. V. McDOWELL,
J. W. SMITH.