(No Model.) 2 Sheets—Sheet 1.

J. W. OTTERMAN & C. A. R. L. VER GENIUS.

ROAD GRADING AND DITCHING MACHINE.

No. 294,330. Patented Feb. 26, 1884.

Fig 1

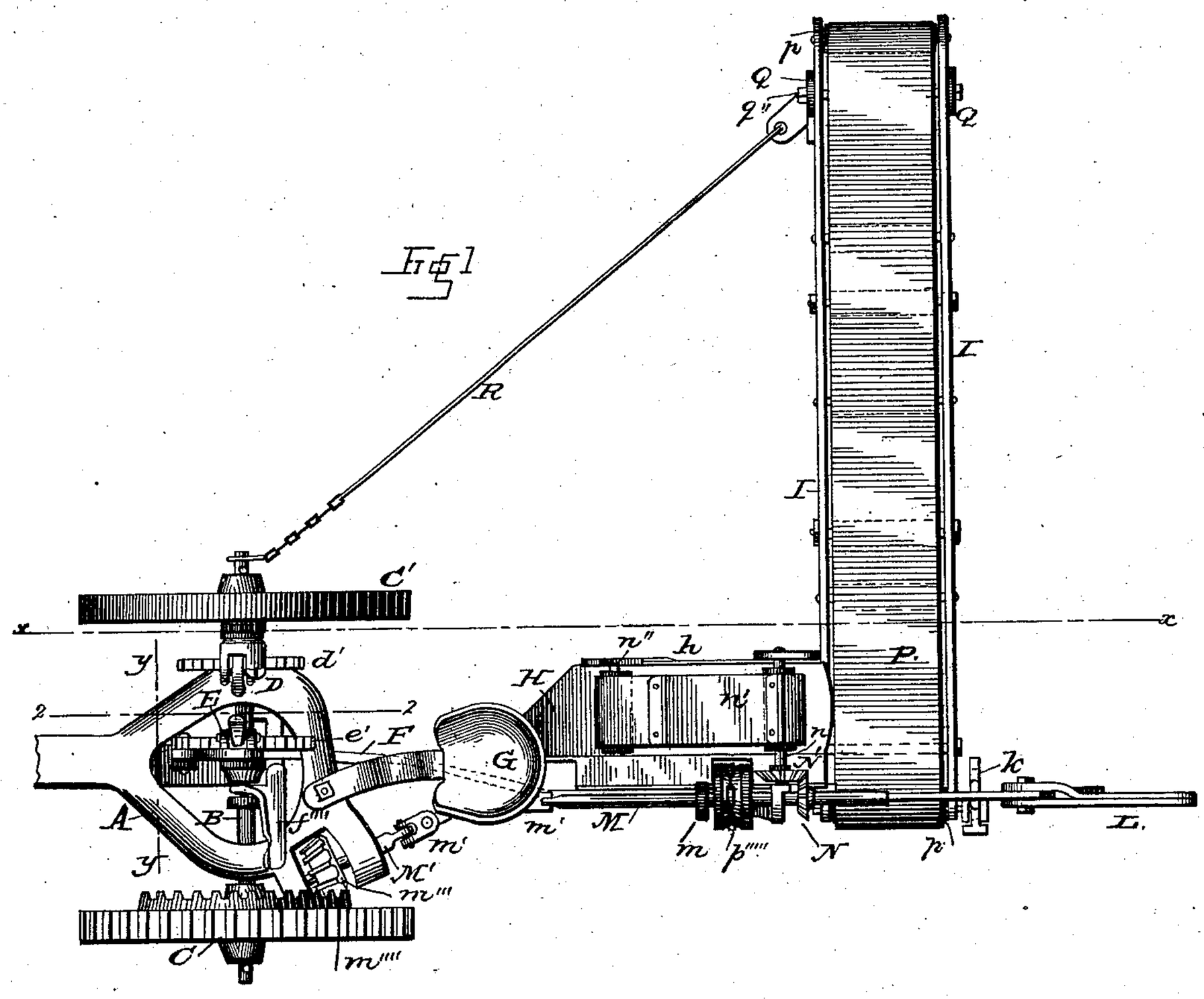

Fig 2

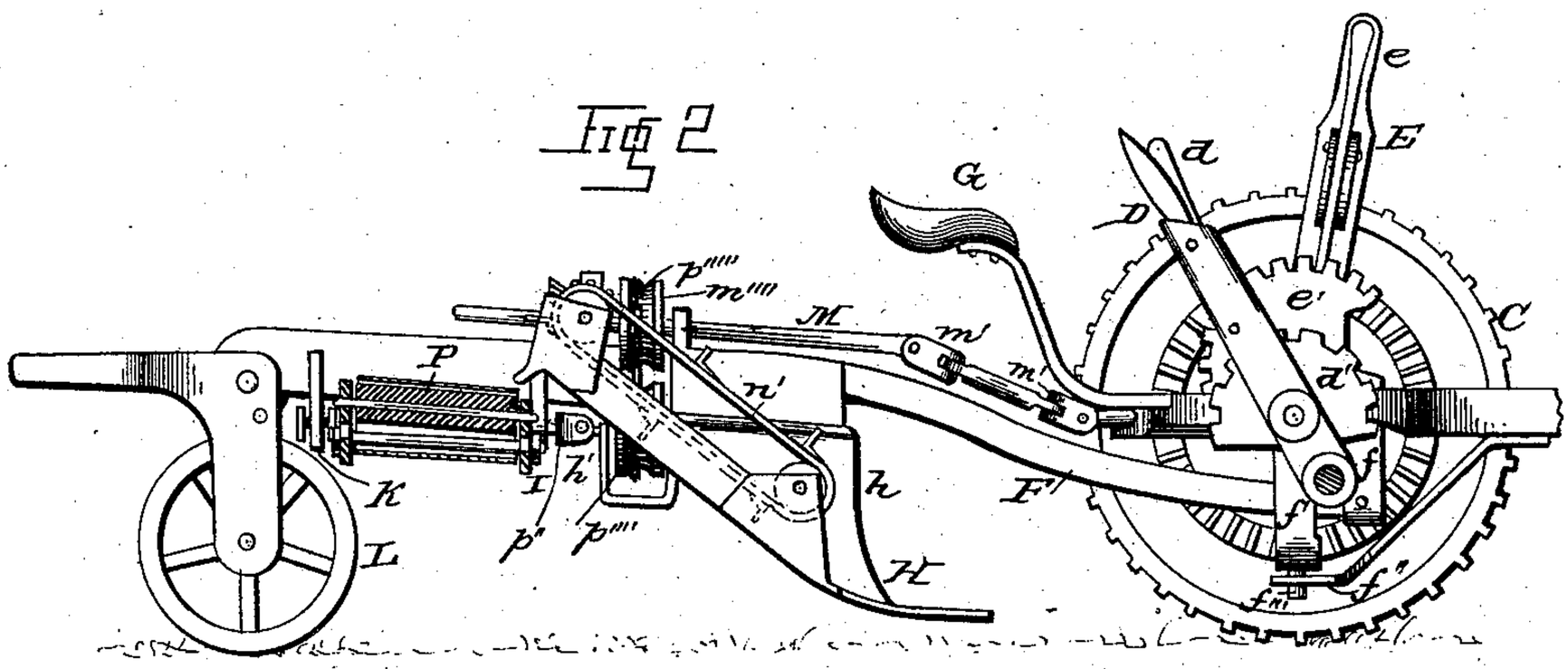

Fig. 7.

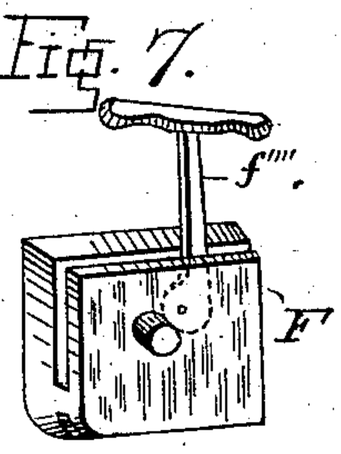

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Fig 3

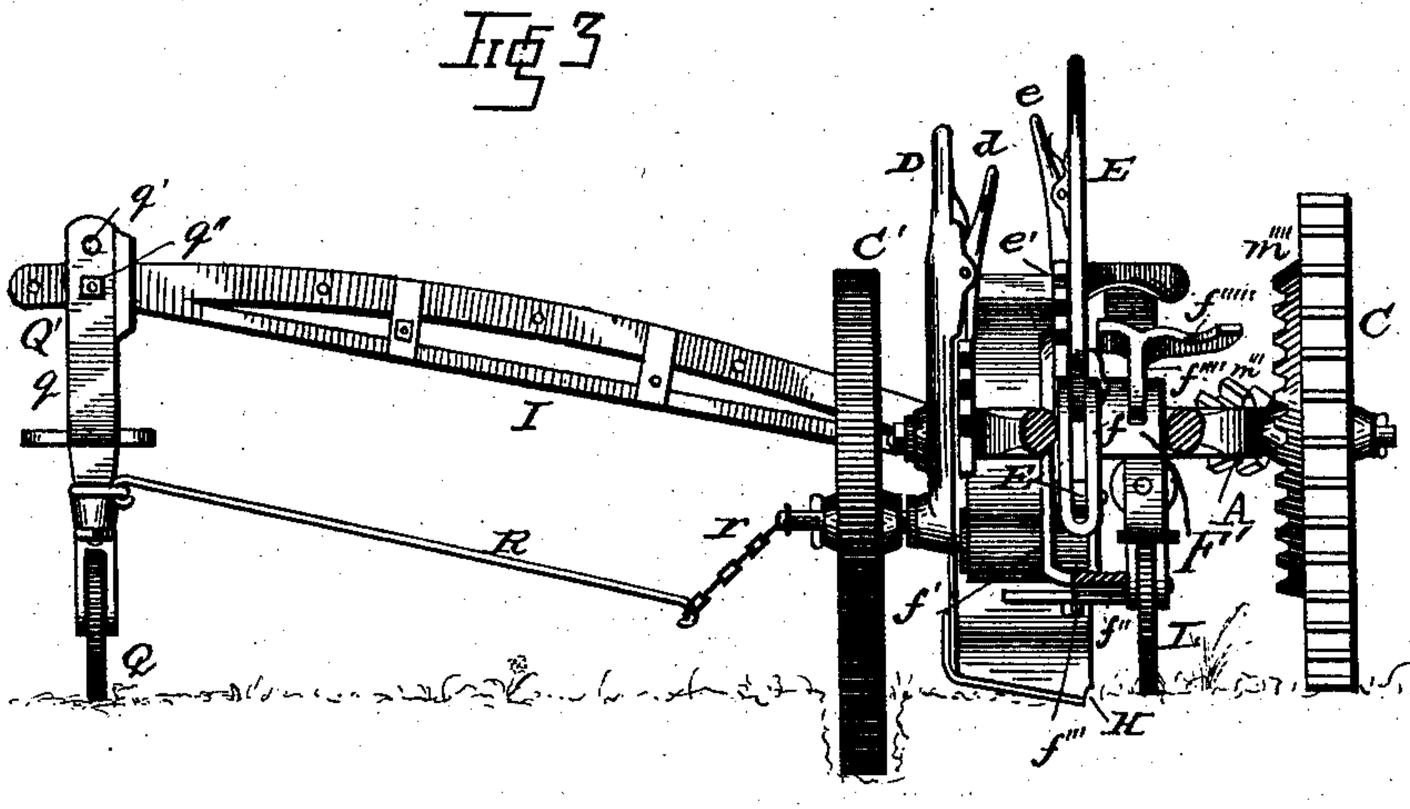


Fig 4

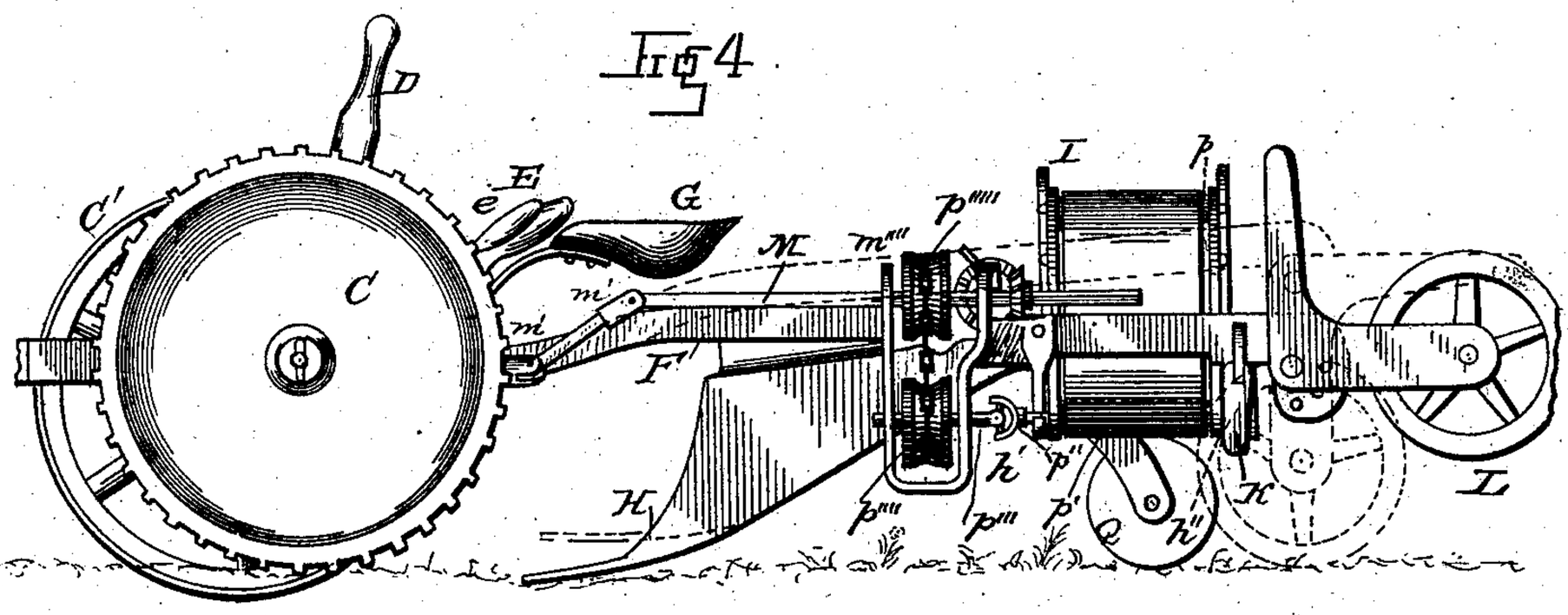


Fig 5

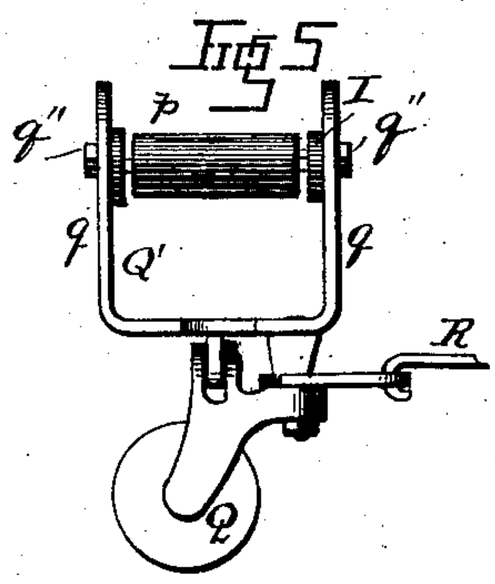
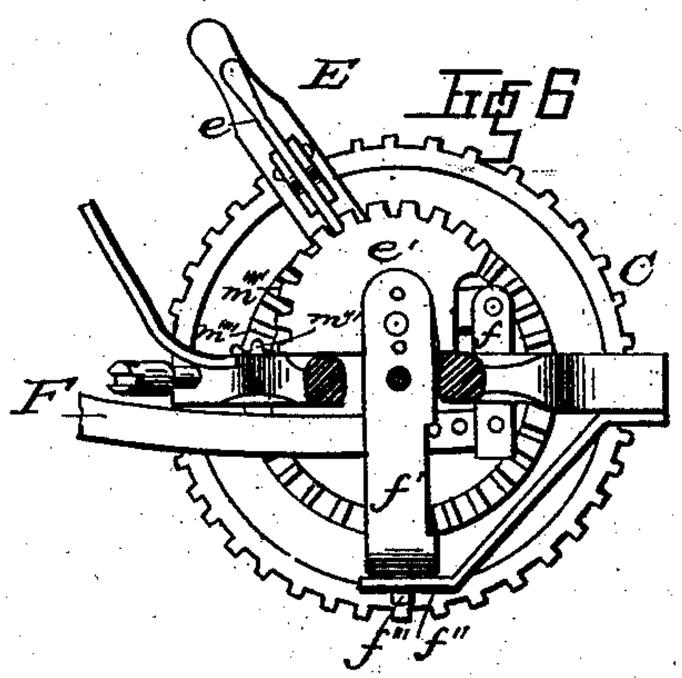


Fig 6



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UNITED STATES PATENT OFFICE.

JOHN W. OTTERMAN, OF PORT BYRON, AND CHRISTIAN A. R. L. VER GENIUS, OF GALESBURG, ILLINOIS; SAID VER GENIUS ASSIGNOR TO SAID OTTERMAN.

ROAD GRADING AND DITCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 294,330, dated February 26, 1884.

Application filed February 2, 1883. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. OTTERMAN and CHRISTIAN A. R. L. VER GENIUS, citizens of the United States, residing, OTTERMAN at Port Byron, in the county of Rock Island and State of Illinois, and VER GENIUS at Galesburg, county of Knox, and State of Illinois, have invented certain new and useful Improvements in Road Grading and Ditching Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for grading roads and for ditching, of that class in which a plow is used to excavate the dirt, and apparatus, arranged in connection therewith, for elevating it and carrying it laterally to the desired place of discharge; and the invention consists in constructions and combinations hereinafter described, and set forth in the claims hereto annexed.

In the accompanying drawings, which illustrate our invention, Figure 1 is a top plan. Fig. 2 is a sectional elevation in the line *x x* in Fig. 1. Fig. 3 is a transverse sectional elevation in line *y y* in Fig. 1. Fig. 4 is a side elevation. Fig. 5 is an end elevation of the lateral dirt-carrier. Fig. 6 is a sectional elevation in line 2 2 in Fig. 1. Fig. 7 is a detail showing the part F′.

Referring to the drawings by letters, the same letter indicating the same part in the different figures, letter A represents a frame in which an axle, B, is rigidly secured. A supporting-wheel, C, is journaled on one end of the axle B, and a lever, D, on its other end.

To the lower end of the lever D the supporting-wheel C′ is journaled. The wheel C′ may be raised and lowered relatively to the wheel C by oscillating the lever D, and may be fixed at any desired position by means of a thumb-latch, *d*, on the lever, and a segmental rack-bar, *d′*, on the frame A.

E is an elbow-lever journaled on the axle B, or on block F′, which may slide on such axle, and adjustable in position by means of a thumb-latch, *e*, which engages with a segmental rack-bar, *e′*, which is secured to the axle B, as hereinafter described.

F is the plow-beam, connected at its forward end to one end of the lever E by a link, *f*, in such manner that by adjusting the lever E radially on its journal the front end of the plow-beam may be raised and lowered as desired. This link holds the beam in such manner that the latter cannot swing laterally, as would be the case if suspended by a chain. The plow-beam F is held laterally by a slotted pendant, *f′*, secured to or forming part of rack-bar *e′*, as shown at Fig. 3, the lower end of which pendant *f′* is adjustable laterally in the lower end of a slotted brace, *f″*, in which it is held after adjustment by a set-screw, *f‴*. The lever E and rack-bar *e′* may be adjusted laterally on the axle B, to give greater or less width of cut to the plow, and held, after adjustment, by a cam-lever, *f⁗*, fulcrumed in the slotted block or standard F′, and the upper end, *f⁗⁗*, of which is formed as shown so that the driver, in his seat G, may place his feet thereon to operate it. The plow-beam F extends backwardly, and has a plow, H, attached to it by a standard, *h*. The plow H may be formed as shown, or may be of any desired construction. A laterally-projecting frame, I, is hinged at one end to the plow-beam, in rear of the plow H, by a universal hinge or journal, *h′*, which forms part of the universal joint *p″* at one side, and a journal, *h″*, at its other side, which operates in a slot, *k*, in a pendant, K, so that the frame I may be swung either horizontally or vertically, to adapt it to different elevations, and for other purposes. The rear end of the plow-beam is supported by a wheel, L, which may be turned upwardly by the bent lever, which is hinged to the beam and projects rearwardly, so that access can be readily had thereto, as shown by full lines at Fig. 4, when the plow is in operation, and turned down, as shown by dotted lines at same figure, to support the plow above the ground for local transportation.

M is a shaft, journaled in suitable bearings,

m, on the plow-beam, and connected by universal joints m' m', with a shaft, M', which gears by a bevel-gear, m''', with a drive-pinion, m'''', carried on the wheel C.

N is a miter-wheel on the shaft M, which gears with a similar wheel, N', on a shaft, n, at the upper end of the standard h. A common carrier-belt, n', runs on the shaft n and a shaft, n'', at the lower end of standard h, and serves to elevate the dirt loosened by the plow and carry it upward and discharge it on the belt P, which is carried on rollers p p' in either end of frame I. The lower roller, p', is connected by a universal joint, p'', with a shaft, p''', which carries a pulley, p'''', connected by a belt, p''''', with a pulley, m''''', on the shaft M, by means of which movement is given to the belt P, so as to carry the dirt over laterally which is delivered to it by the belt n'. The outer end of the frame I is supported on a caster-wheel, Q, which is carried in a frame, Q'. The side bars, q, of the frame Q' are provided with holes q', through which bolts q'' pass to secure it to the frame I, and by means of which the outer end of frame I may be adjusted at higher or lower elevations, as desired.

R is a rod connected at one end with the distal end of frame I, and at its other end, by links r, with the axle of wheel C'. By engaging the different links r with the axle of wheel C' the angle of the frame I with the plow-beam may be adjusted as desired. The links r may be secured to any part of the forward part of the plow-beam or wheel-frame, if preferred.

It will be evident that the frame I may be attached to the plow-beam, as shown, or may be operated in same manner, if attached immediately in rear of and beneath the plow, and the belt n' then be dispensed with.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination with the wheeled frame, plow, carrier-belt n', and lateral frame I, carrying the dirt-belt, the shaft M, having universal joints m' m'', and geared with the wheel C and said carrier-belt n' and the dirt-carrying belt, substantially as and for the purpose specified.

2. In combination with the wheeled frame, plow, and dirt-carrying belts, the lever E, journaled on the axle and connected with the forward end of the plow-beam by a link, f, substantially as and for the purpose specified.

3. The combination of the wheeled frame, axle, plow-beam, the lever E and its segmental rack-bar, and the pendant f', adapted to slide laterally on the axle and to be held by the cam-lever f'''', substantially as and for the purpose specified.

4. In combination with the wheeled frame and plow-beam, the pendant f', adjustable laterally at its upper end on the axle and at its lower end in the slotted brace f'', substantially as and for the purpose specified..

5. In combination with the wheeled frame, plow, and dirt-carrying belts and frame I, the wheel having its rearwardly-projecting bent lever hinged to the rear end of the plow-beam, adapted to operate substantially as and for the purpose specified.

6. In combination with the plow, the adjustable rod R and adjustable caster-wheel Q, the lateral belt-carrying frame I, hinged to the plow-beam, to permit swinging the outer end of said frame I laterally and vertically, substantially as and for the purpose specified.

7. In combination with the plow, the laterally-extending frame I, hinged at one side to the plow-beam by a universal joint and at its other side by a slotted connection which permits swinging said frame I laterally, substantially as and for the purpose specified.

8. The combination of the wheeled frame, the plow-beam hinged thereto, the lateral belt-carrying frame I, having a pulley upon its lower shaft, the carrier-belt n', having geared shaft n N', and a shaft, M, having a gear-wheel, N, which meshes with gear-wheel N', and a pulley connected with the pulley on the shaft of frame I by a band, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN W. OTTERMAN.
CHRISTIAN A. R. L. VER GENIUS.

Witnesses:
HARRY M. RICHARDS,
THOMAS MCKEE.