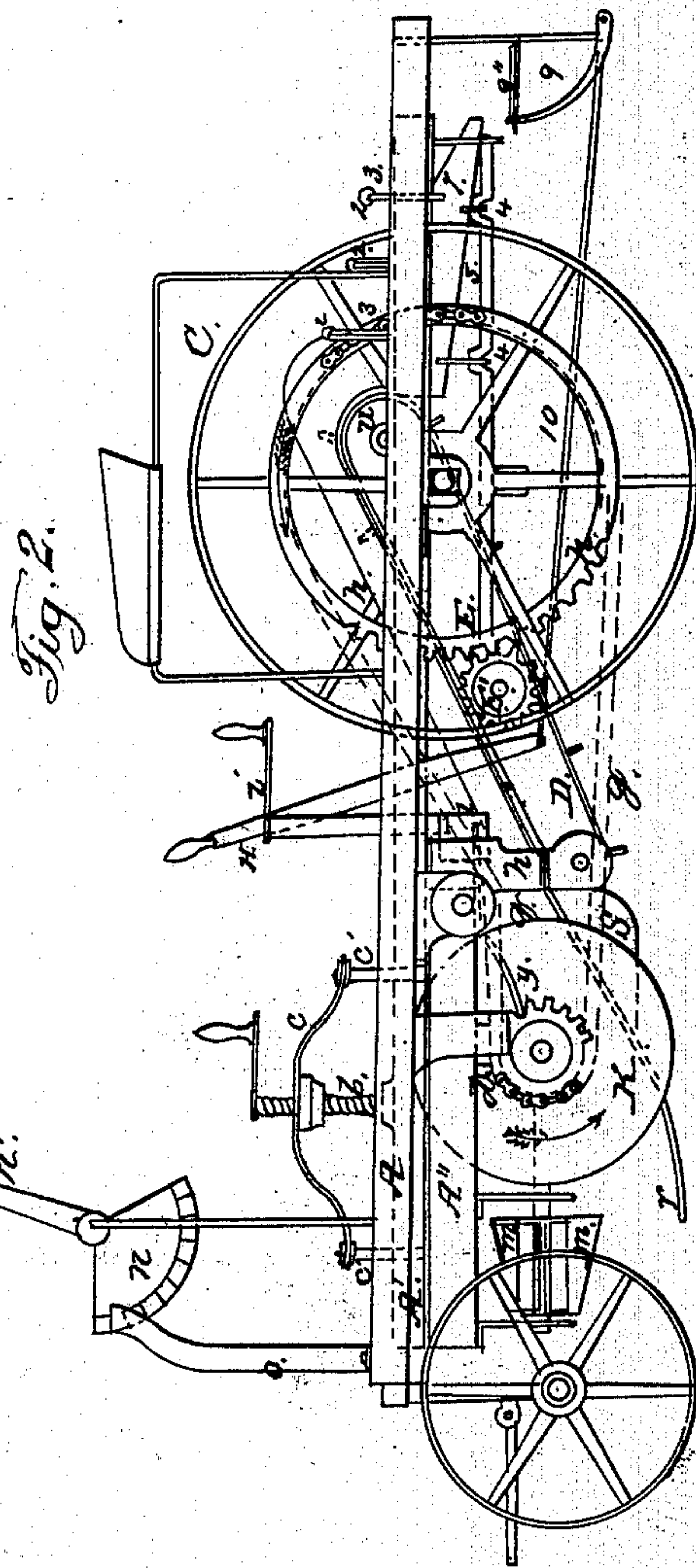
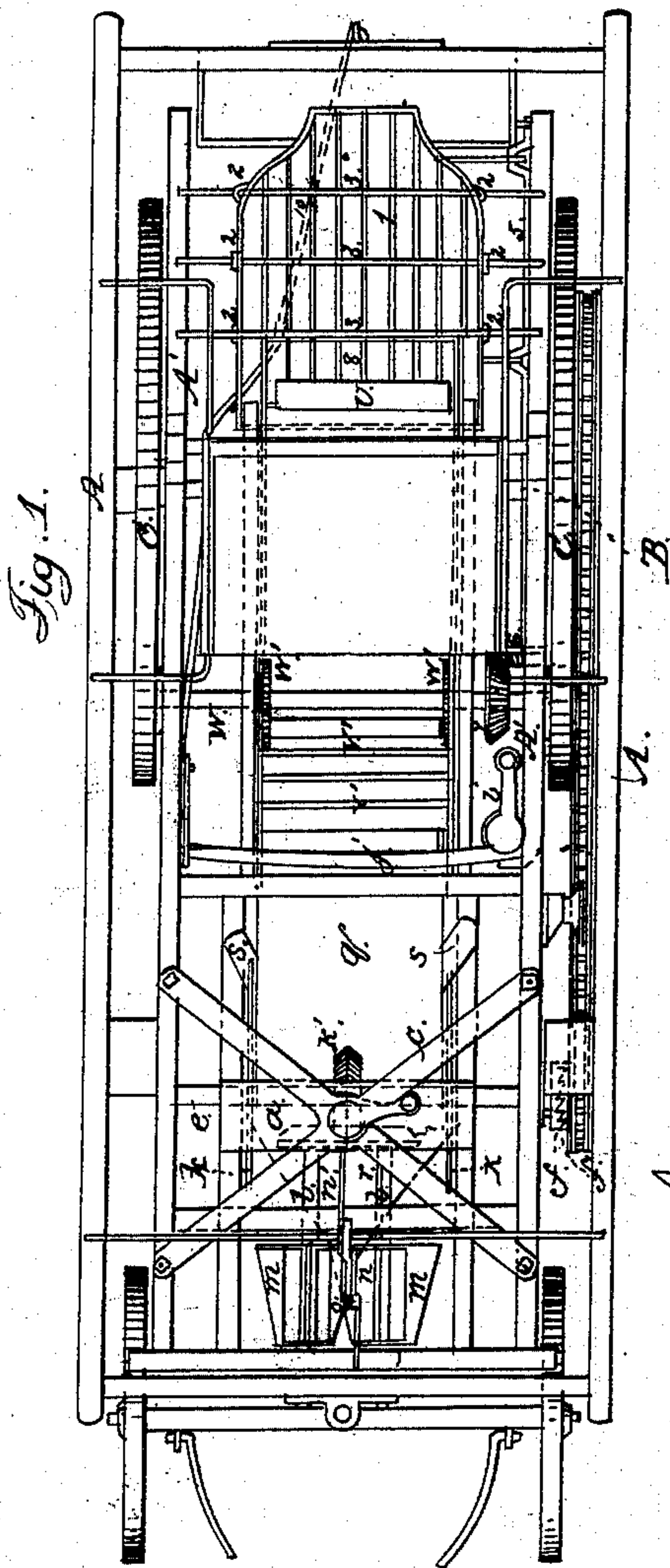


M. T. DRAKE.

Potato-Digger.

Patented Dec. 11, 1866.

No. 60.347.



WITNESSES:

Charles L. Fisher  
John F. Christian

INVENTOR;

M. T. Drake.

M. T. DRAKE.

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Fig. 3.

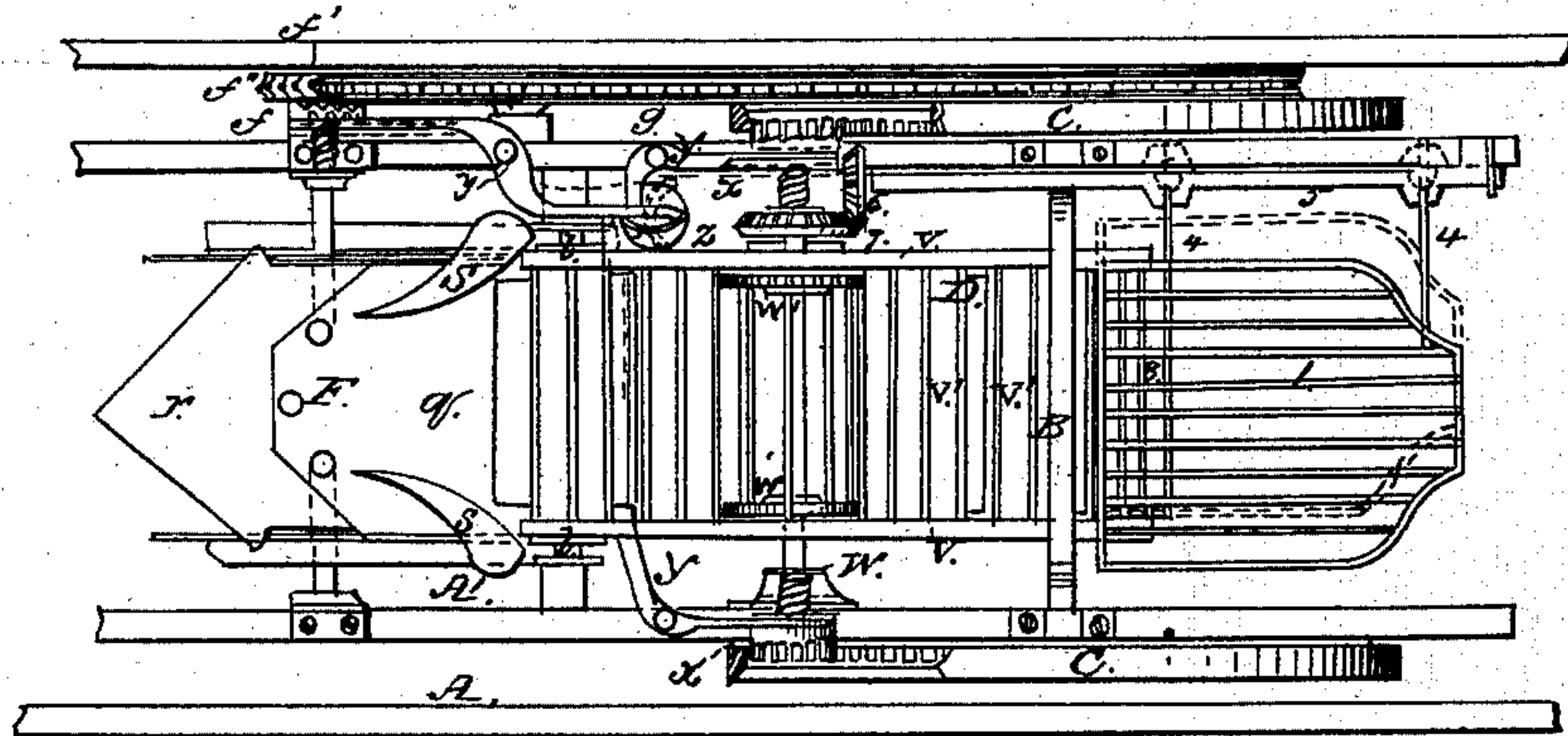


Fig. 4.

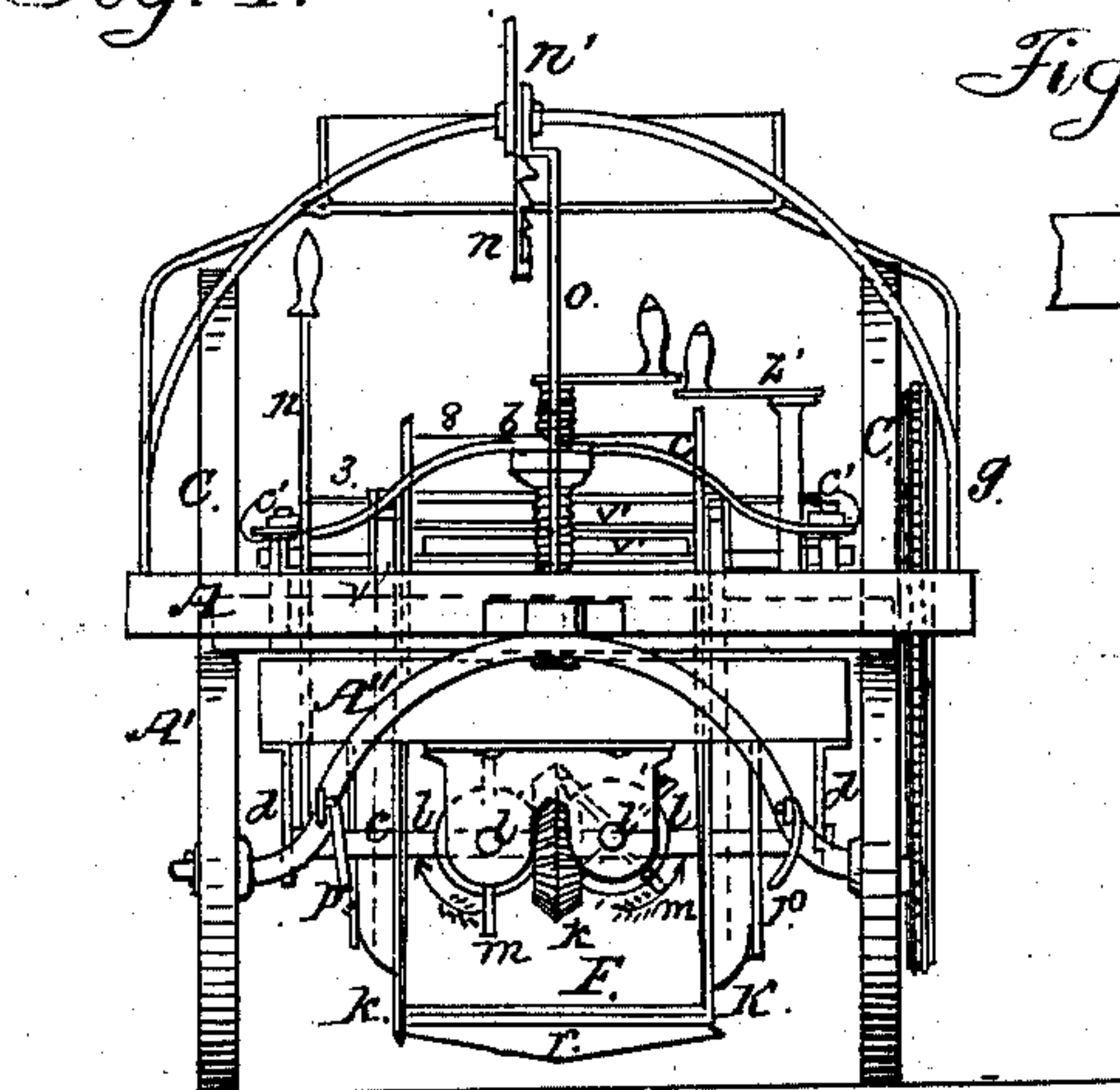
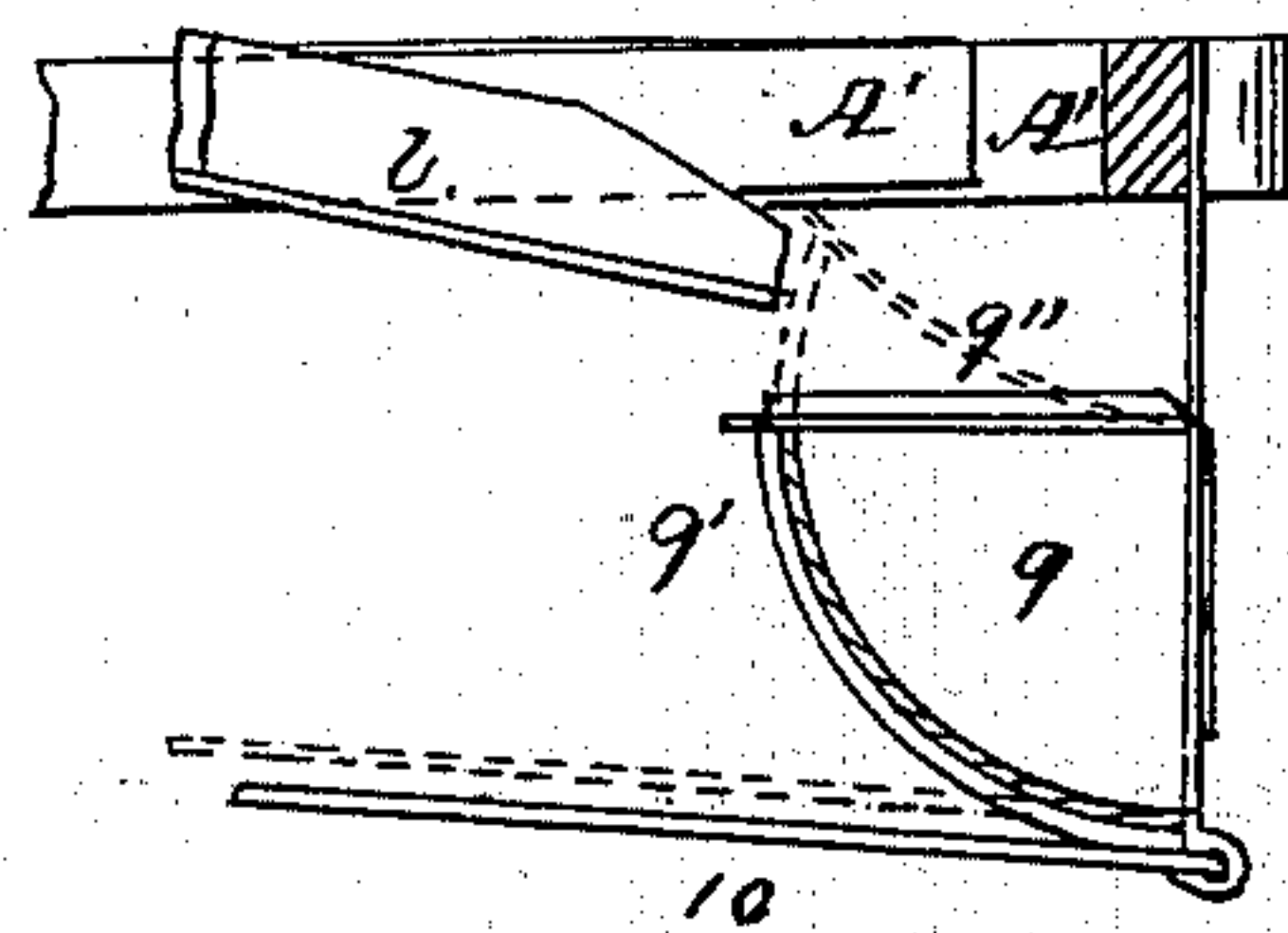


Fig. 5.



WITNESSES:

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# United States Patent Office.

## IMPROVEMENT IN POTATO DIGGER.

M. T. DRAKE, OF PLEASANT RIDGE, OHIO.

*Letters Patent No. 60,347, dated December 11, 1866.*

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, M. T. DRAKE, of Pleasant Ridge, Hamilton county, and State of Ohio, have invented a new and improved Potato Digger, of which the following is a full and clear description, reference being had to the accompanying drawings, forming part of this specification.

My improvement relates to a machine so constructed as to greatly facilitate the gathering, cleansing, and dropping in piles of potatoes. First, by means of a shovel, cutters, and revolving levellers, attached to movable frames within the main frame and operated by levers and screw; second, by means of an improved elevator and screen; third, by means of a dumping-box attached to the rear of the machine.

Figure 1 is a plan of my improved potato digger, as seen from above.

Figure 2 is an elevation of the machine as seen from the left side.

Figure 3 is a general view of the under side of the machine, as seen from beneath.

Figure 4 is a front elevation of the machine.

Figure 5 is a section view, taken longitudinally through part of the screen and the dumping-box.

A represents the main frame of the potato digger, B is the axle of the driving-wheels C. The axle B is made fast to the main frame A, the wheels C revolving freely upon it. An inner frame, A', rests upon and vibrates about the axle B. A cross-piece, a, near the front end of frame A', acts as a bearing for gauging-screw, b, which passes through the hub on the elevating frame c, at the four corners of frame c, are made fast, and pass vertically downwards through the inner frame A', the elevating columns c', and made fast to the gauging-frame A'', directly beneath the front end of the inner frame A'. From the under side of the side rails of gauging-frame A'' depend hangers, d, which support the cutter-axle e. Coiled about the cutter-axle e, between the left hanger d and clutch f, upon the extreme end of cutter-axle e, clutch f, meshed into clutch f'', made fast to cog-wheel f'', about which passes the driving-chain g, driving-chain g engages the large cog-wheel h, made fast to the left driving-wheel c. The cutter-axle e is provided with two circular cutters, k, symmetrically placed with reference to the frame of the machine, and at a designated distance apart. A double mitre gear-wheel, k', is secured to cutter-axle e, midway between the circular cutters k, it meshes into the mitre-wheels l, which are attached to the axles l'. To the front end of axle l' are secured the levellers m. The inner frame, A', is elevated or depressed at its front end by operating the ratchet sector n through handle n', the spring standard o made fast to the front rail of main frame A, engages the ratchet sector n. From the inner frame A' to the rear of gauging-frame A'', project downwards the supports p, from which, inclining towards the ground, is the plow F, made up of shovel q, passing between cutters k, and terminating in share r and mould-boards s, secured to the under side of shovel q, also project outside of cutters k. In the supports p are journals for the drum t. The endless bucket elevator D passes about the drum t and over drum u, the axle of which revolves in journal-boxes upon the side rails of inner frame A', directly in the rear of axle B, the bucket elevator D, is made up of two belts, v, and rods, v', which pass between and are secured to them; every fourth rod has attached to it the plate v'', making an angle of nearly ninety degrees with the plane of elevation of the elevator, main gear-wheels E, considerably smaller in diameter than the driving-wheels C, to which they are secured, mesh into pinions E', revolving freely upon axle w, which passes between the upper and lower parts of the bucket elevator D, cog-wheels w' made fast to the axle w, engage rods v' of the elevator. A clutch, x, upon either end of axle w, sliding upon a feather in the axle w, throws in or out of gear the cog-wheel f'' and pinions E', by means of levers y and y' and eccentric z, which is operated by lever or crank-handle z'. To the rear of and somewhat below the elevator is the reciprocating screen, 1, which hangs by rods, 2, from the transverse girders, 3, which are made fast to the side rails of inner frame A', from the rear and front ends of screen 1, to which they are pivoted, the pitmen 4 extend to the crank-shaft 5; crank-shaft 5 has secured to its front end the mitre-gear 6, meshing into mitre-wheel 7, upon axle w. A short distance to the rear of the elevator is the pulverizing-board 8, nearly vertical in position over the front end of screen 1. Directly beneath the rear cross-piece of main frame A, to which it is secured, is dumping-box 9; a transverse section of the box is in shape the quadrant of a circle, the circular bottom 9' is fitted into grooves in the ends of the box. Springs 9'' bear down upon the circular bottom 9', the rod 10 is made fast to a lug projecting from the circular bottom, and also to the lower end of lever 11.



*Operation.*

The machine, in moving forward, the working parts being in gear, gives a rotary motion to the levellers *m*, which rotate outwardly at the bottom, breaking down, at the same time spreading from the centre line of the row the potato-tops. When the machine has been advanced about the length of the levellers *m*, the forward point of share *r* enters beneath the potatoes in the row, continuing in a horizontal position until the onward movement of the machine brings the shovel *q* in contact with the ground; at this time the circular cutters *k* have operated in cutting off the potato-tops and channelling the ground on each side of the plow *F*, thus limiting the amount of earth to be raised from the ground by shovel *q*. The forward motion of the machine still continuing, the earth containing the potatoes passes from the shovel *q* on to the endless bucket elevator *D*, up which it is carried rapidly and thrown against the pulverizing-board *8*. In the ascent upon the elevator much of the loose earth dropped between the rods *v'* of the elevator to the ground, materially lessening the weight of material carried. Severe impact which the potatoes surrounded with earth, and the clods meet in contact with the pulverizing-board *8*, effectually separates the potatoes from the earth, when both fall upon the reciprocating screen *1*. The rapid reciprocating motion of the screen *1* soon causes the now pulverized earth to fall to the ground, the potatoes, on account of the inclination downwards toward the rear drop by degrees into the dumping-box *9*. When the dumping-box is full the operator draws toward him the handle of the lever *11*, this opens the circular bottom *9'*, the potatoes fall in a pile, the bottom when up, and the box open, as shown in fig. 5; the mouth of the screen is covered so as to prevent the potatoes passing from the screen into the dumping-box while it is open, the operator having removed the pressure, the springs *9''* react upon and closes the circular bottom, the dumping-box remains closed until full, when it is again opened as above shown. In order to dig deep or shallow, the front end of the inner frame *A'*, the operator elevates or depresses, the share *r* is thus made to take up any amount of earth, or may be removed entirely out of the ground; the mould-boards *s* serve to throw outward from the potato-row the earth not taken up by the shovel *q*, and leaving the ground in good condition for planting. The depth the cutters enter the ground and the distance above the potato-row of the levellers *m*, is regulated by means of gauging-screw *b*, elevating or depressing gauging-frame *A''*. When the machine is backed the moving parts of the machine do not operate, the clutches being in gear only when the machine moves forward.

Having described the construction of my improved potato digger, the use to which its various parts are adapted, and the advantages it possesses over the machines now in use, I make the following claims, which I desire to secure by Letters Patent—

1. The main frame *A*, vibrating inner frame *A'*, gauging-frame *A''*, and axle *B*, constructed substantially as above described, and for the purpose specified.
2. The levellers *m*, constructed and operating as above described, and for the purpose set forth.
3. The levellers *m* and cutters *k*, in combination with gauging-frame *A''*, substantially as above described and set forth.
4. The plow *F*, consisting of shovel *q*, share *r*, and mould-boards *s*, as above described, when used for the purpose set forth.
5. The shovel *q*, in combination with the vibrating inner frame *A'*, constructed and operating as above described, and for the purpose set forth.
6. The endless bucket elevator *D*, constructed substantially as above described.
7. The pulverizing-board *8*, in combination with the endless bucket elevator *D*, for the purpose specified.
8. The irregularly reciprocating screen *1*, in combination with the crank-shaft *5*, constructed and operating as above described, and for the purpose set forth.
9. The dumping-box *9*, in combination with rod *10* and lever *11*, constructed and operating substantially as above described, and for the purpose set forth.
10. The clutch-gearing *f* and *x*, in combination with the levers *y* and *y'* and eccentric *z*, as above described, and for the purpose set forth.
11. The frames *A*, *A'*, and *A''*, levellers *m*, circular cutters *k*, plow *F*, endless bucket elevator *D*, pulverizing-board *8*, irregularly reciprocating screen *1*, dumping-box *9*, and clutch-gearings *f* and *x*, combined and operating as above described, and for the purpose set forth.

M. T. DRAKE.

Witnesses:

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CHARLES L. FISHER,