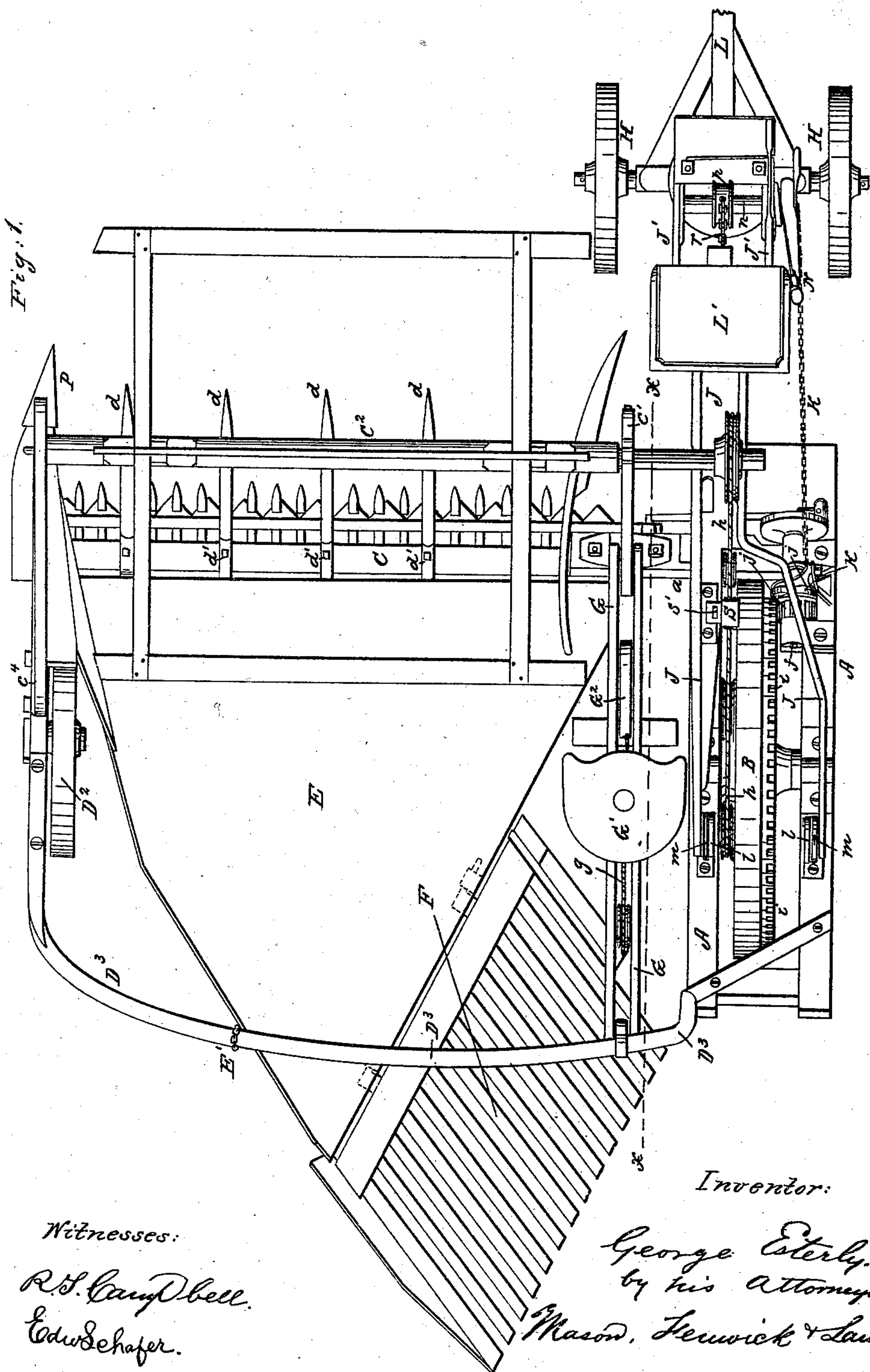


G. ESTERLY.
Harvester.

3 Sheets—Sheet 1.

No. 74,676.

Patented Feb. 18, 1868.

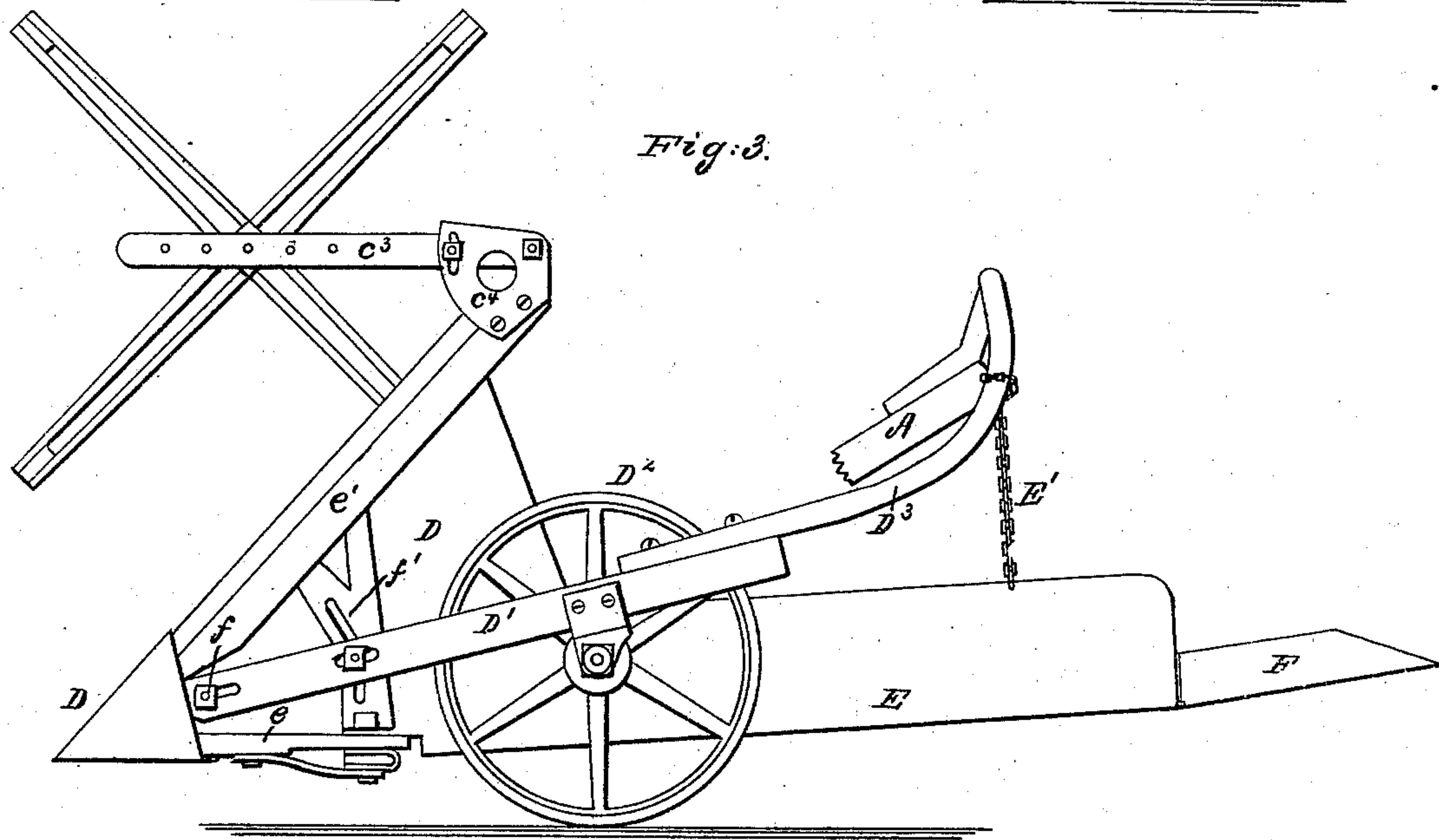
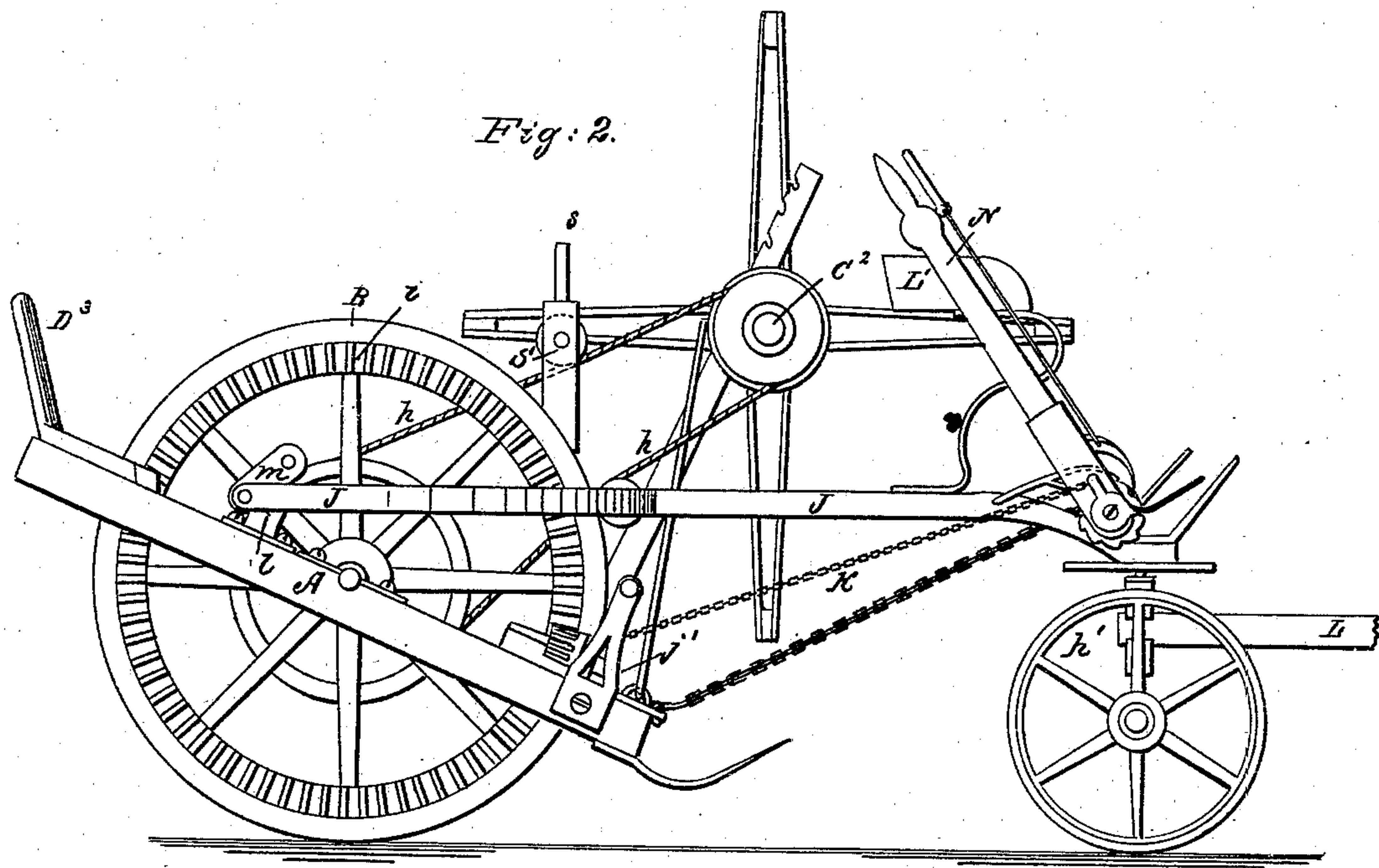


G. ESTERLY.

Harvester.

No. 74,676.

Patented Feb. 18, 1868.



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Inventor:

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United States Patent Office.

GEORGE ESTERLY, OF WHITEWATER, WISCONSIN.

Letters Patent No. 74,676, dated February 18, 1868.

IMPROVEMENT IN HARVESTERS.

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, GEORGE ESTERLY, of Whitewater, in the county of Walworth, and State of Wisconsin, have invented an Improved Harvesting-Machine; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, sheet 1, is a top view of the machine complete.

Figure 2, sheet 1, is an elevation of one side of the machine, showing the manner of connecting the forward truck with the main draught-frame.

Figure 3, sheet 2, is an elevation of the grain-side of the platform, showing the devices for adjusting the outer end of the finger-bar.

Figure 4, sheet 2, is a longitudinal section, taken vertically through the machine at the point indicated by red lines *x x*, in fig. 1, showing the manner of jointing the inner end of the finger-bar to the main draught-frame, and also the manner of suspending the grain-delivering apron.

Figures 5 and 6 are views, showing the construction of the fingers or teeth for lifting crinkled grain.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements in the reaping and mowing-machinery which has been secured to me by several Letters Patent of the United States, in which the finger-bar is supported at its outer end by a grain-wheel, and at its inner end by a frame, which is mounted upon a single driving-wheel, and which is attached by a draught-bar and chain to forward truck-wheels.

The nature of my invention consists in attaching auxiliary fingers or teeth at suitable points upon an adjustable finger-bar, and in so constructing these fingers that, when applied to their finger-bar, they shall project forward over the sickle and incline downward, in such manner that they serve to raise lodged and crinkled grain, and raise it to a position for being cut by the sickle, as will be hereinafter described.

The invention further consists in hinging a dropping-device or apron to the inner edge of a platform, in such manner that the attendant, whilst riding upon the machine, can, at pleasure, discharge the grain which has been raked upon said device upon the ground, and out of the way of the team in the succeeding cut, as will be hereinafter described.

It also consists in attaching the rear end or ends of the draught-bar or frame to the main frame of the machine, by means of self-adjusting arms, in combination with a draught-chain, which connects the front end of the main frame to the forward truck, for the purpose of allowing said draught-bar to have an endwise movement, so that it shall adjust itself to the vertical motions of the finger-bar in passing over the uneven surfaces of the ground, and thereby keeping the draught always on said draught-chain, and preventing the transferring of the draught upon the main frame in rear of the axle of the driving-wheel thereof, as will be hereinafter described.

It also consists in providing for adjusting the outer end of the finger-bar, so as to conform to the adjustment of the inner end of this bar, for the purpose of having the cutting-apparatus of an even pitch throughout its entire length, as will be hereinafter described.

It also consists in the employment of a belt-tightener upon the bar, which connects the main frame to the forward truck, for the purpose of keeping the belt, which communicates motion from the driving-wheel axle to the reel-shaft, under uniform tension, during the cutting of grain, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, I have represented my improvement applied to a reaping-machine, upon which I have already secured claims by Letters Patent. *A* is the main draught-frame, which is suitably hung upon the axle of the main transporting and driving-wheel *B*, so that this frame can rock freely, its front end rising and falling in conformity with the undulations of the surface passed over. The front transverse beam, *a*, of the main frame *A*, extends out laterally from the grain-side of this frame, and forms a sill, to which the finger-bar *C* is attached by a rocking-joint, *b*, shown in fig. 4, which will allow of the front edge of the finger-bar being raised or depressed, according to the height or other condition of the grain to be cut. On top of this sill *a*, and bolted securely to it, is a slotted sector or inside reel-jack, *c*, to which the lower end of the inner reel-

post c^1 is pivoted, and also connected by an adjusting-bolt passing through the slot on the jack, as shown in fig. 4. The finger-bar C, at its inner end, is adjusted and set at the required pitch by means of a curved brace, d^2 , which is rigidly bolted to the finger-bar at one end, and secured to the reel-jack c at the other end, by the pivot-bolt of the reel-post, which bolt is inserted through one of a number of holes made through the brace. The outer end of the finger-bar C is bolted securely to the bottom piece e of the outer divider D, and the outer end of the reel-shaft c^2 has its bearings in an overhanging arm, c^3 , which is connected to the upper end of the forwardly-inclined beam e^1 of said divider by means of the slotted segment or outer reel-jack c^4 , as shown in fig. 3. The outer bearing of the reel may be dispensed with by using what is known as an overhung-reel.

The divider D is attached to the forward end of a longitudinal divider-beam, D^1 , by means of a transverse pin or bolt, f , which passes through a longitudinal slot made through the front end of the beam D^1 , and also through a vertical slot which is made through the inner face-plate of the divider. The divider-beam D^1 is again attached to the divider by means of a set-screw passing through the curved slot of a brace, f^1 , which is secured to the two beams e e' in rear of the point of connection, which is indicated at f , fig. 3. By means of the devices f f' the outer end of finger-beam is adjusted.

The divider-beam D^1 is supported upon the wheel D^2 , which, in consequence of its location, I term the grain-wheel, and this wheel is sustained against backward or lateral thrust by means of an arched brace, D^3 , which is securely bolted to it at one end, and to the rear end of the draught-frame A at the other end, as shown in fig. 1. This brace D^3 is arched in such manner as not to interfere with the falling of the cut grain upon the platform, nor the removal of the grain therefrom.

It will be seen, from the above description of my mode of adjusting the finger-bar C, that its front edge can be set to run at any desired height from the ground, and that this is effected by adjusting it at both ends, so that the pitch or inclination of this bar will be uniform throughout its length. I have made provision, heretofore, for adjusting the finger-bar at its inner end by a transverse joint at b , and, finding that with this joint above, the bar could not be adjusted uniformly, I have now provided the outer auxiliary means of adjustment, above described.

The platform E is of an angular form, so that grain can be raked from its inner edge (by hand) and delivered upon the ground, out of the way of the team in the operation of cutting the succeeding swath. This platform E is hinged at the front edge to the rear edge of the finger-bar C, and suspended at its rear end by means of a chain, E' , or other flexible connection from the arched brace D^3 , as shown in fig. 3. This mode of attaching the platform to its finger-bar admits of the adjustment of either one independently of the other, and allows of the front edge of the finger-bar being set at any desired height, without depressing the rear end of the platform.

To the rear inner edge of the platform E, I attach, by means of hinges, an apron or grain-board, F, which may be made of slats, as shown, or which may be made closed. This dropping-device forms an inner rear extension of the platform E, and its rear end is suspended by means of a chain or rope, g , passing over a pulley on the longitudinal seat-beam G, beneath the seat G^1 , and attached to a vibrating-treadle, G^2 , as shown in figs. 1 and 4. The raker or other person sitting upon the seat G^1 , which is upon the beam G, can, by moving the treadle G^2 with his feet, raise or drop the rear end of the device F, at pleasure. The beam G is pivoted at its front end to the inner reel-post c^1 , at the proper height from the finger-bar, and attached by a hooked pendant at its rear end to the arched brace D^3 . Upon the seat on this beam the person sits who rakes off the grain from the platform.

The finger-bar C has a number of long fingers or teeth, d d , secured to it, in such manner that they can be removed and replaced at pleasure. These fingers extend over the cutting-apparatus, and project forward and downward in front of the sickle-fingers, without interfering with the cutting-operation, for the purpose of lifting lodged or crinkled grain and bringing it within range of the sickle. When the grain stands up, these fingers or lifters d d will not be required, and can be removed from the finger-bar. It will be seen, by reference to figs. 5 and 6, that the fingers d are secured to or formed on short and narrow braces d' , which elevate the rear ends of the former, so as to raise the grain high enough to be carried back by the reel.

The reel-shaft c^2 is driven by means of a belt or chain, h , which passes over two sheaves, one of which is keyed upon the axle of the driving-wheel B, and the other is keyed upon the inner overhanging end of said shaft. This belt is kept under proper tension, during the operation of the machine, by means of a device which I shall hereinafter explain.

The driving-wheel B has a concentric spur-face, i , the teeth of which engage with a pinion, j , on a short shaft, j' , which shaft has its bearings upon the frame A, and carries on its front end the crank or eccentric which drives the sickle. The pinion j is applied to its shaft by means of a spring-clutch, k , which is connected by a cord or chain, k' , to an adjusting-lever, so that the driver can stop or start the motion of the sickle at pleasure, while the machine is moving along.

To the longitudinal beams of the main frame A, and on both sides of the driving-wheel B, in rear of the axle thereof, I secure two standards, l l , to the upper ends of which short arms m m are pivoted, so as to vibrate freely in vertical planes. To the free ends of these arms m m the rear forked ends of a draught-beam, J, are pivoted, as shown in figs. 1 and 2. This draught-beam J extends forward a suitable distance, and is connected, by means of forked arms J' J' and a vertical king-bolt, to the axle of a two-wheel truck, K, to which axle the draught-tongue L is secured. Near the front end of this beam J a driver's seat, L' , is mounted, and in front of this seat is a transverse shaft, n , which has its bearings in the forked ends J' J' of the beam J, and which carries on its outer end an adjusting-lever, N, and between its bearings a grooved pulley, p , shown in fig. 1. The lever N is applied loosely upon its shaft, but attached to it by means of a spring-pawl and ratchet-wheel, so that the

driver, whilst sitting upon his seat L' , can turn the shaft n and its pulley in one direction by an intermittent motion. Said ratchet-wheel is also held from turning backward by means of a spring-dog, which is provided with a lever or treadle, by which the driver can allow the shaft n to turn backward at pleasure.

The front end of the main draught-frame A is attached to the pulley p on shaft n by means of a chain, r , shown in figs. 1 and 2, so that the draught will come upon the said draught-frame at its front end, and so that the driver, sitting upon seat L' , can, by turning the shaft n forward, wind the chain r upon its pulley p , and thus raise the front end of frame A , and with it the cutting-apparatus.

It will be seen from the above description, that the horses, which are hitched to the pole L , draw upon the chain r constantly, and that the draught is not transferred through the beam J to the main frame A in rear of the axle of the driving-wheel. This result is brought about by having the beam J attached to the main frame by means of the swinging arms, as described, which form connections at the rear ends of the beam J with its frame, but allow of a free endwise movement, so that the chain r will be kept tightly drawn while the horses are drawing the machine. This arrangement allows the beam J to adjust itself to the motions of the finger-bar in passing over uneven surfaces of the ground, and allows the draught to be applied in such manner that there is always a tendency to lift rather than depress the finger-bar.

The belt h , which passes over the driving-pulley on the axle of the main driving-wheel, and also over the pulley on the reel-shaft, is kept under proper tension, during all the rising and falling motions of the main frame and its finger-bars, by means of an adjustable belt-tightener, S , which is applied to a perpendicular standard, S' , that is secured upon the beam J . This belt-tightener is provided with a pulley, which presses upon the belt h , and takes up the slack caused by the rising of the finger-bar.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of long fingers or teeth d , which are not jointed, with a cutting-apparatus, consisting of a rolling finger-beam, short fingers, and a sickle, and which is adjustable bodily, so as to raise and lower the height of cut, and also adjustable in such a manner that the front ends of both sets of fingers can have their angle of presentation to the grain changed and fixed to work at a given height, all substantially as described.
2. The application to a hinged platform, E , of a dropper, F , which latter is supported at its rear end, so that it can be tilted backward at pleasure, substantially as described.
3. Connecting the beam J to the main draught-frame A by means of flexible or hinged arms m , or their equivalent, in combination with the draught-chain r and forward truck K , substantially as and for the purposes described.
4. The combination of a hinged, slatted dropper, F , with a platform, E , whether the latter be hinged or fixed rigidly to the finger-bar, such dropper being arranged substantially as described.
5. The combination of the devices $f f'$, or their equivalents, for adjusting the grain-end of the finger-beam in the path of a vertical circle, with the device d^2 , or its equivalent, for adjusting in like manner the inner or heel-end of the finger-beam, substantially as described.
6. The arrangement of the belt-tightener upon the hinged beam J , said tightener and said beam operating together, substantially as described.

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Witnesses:

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