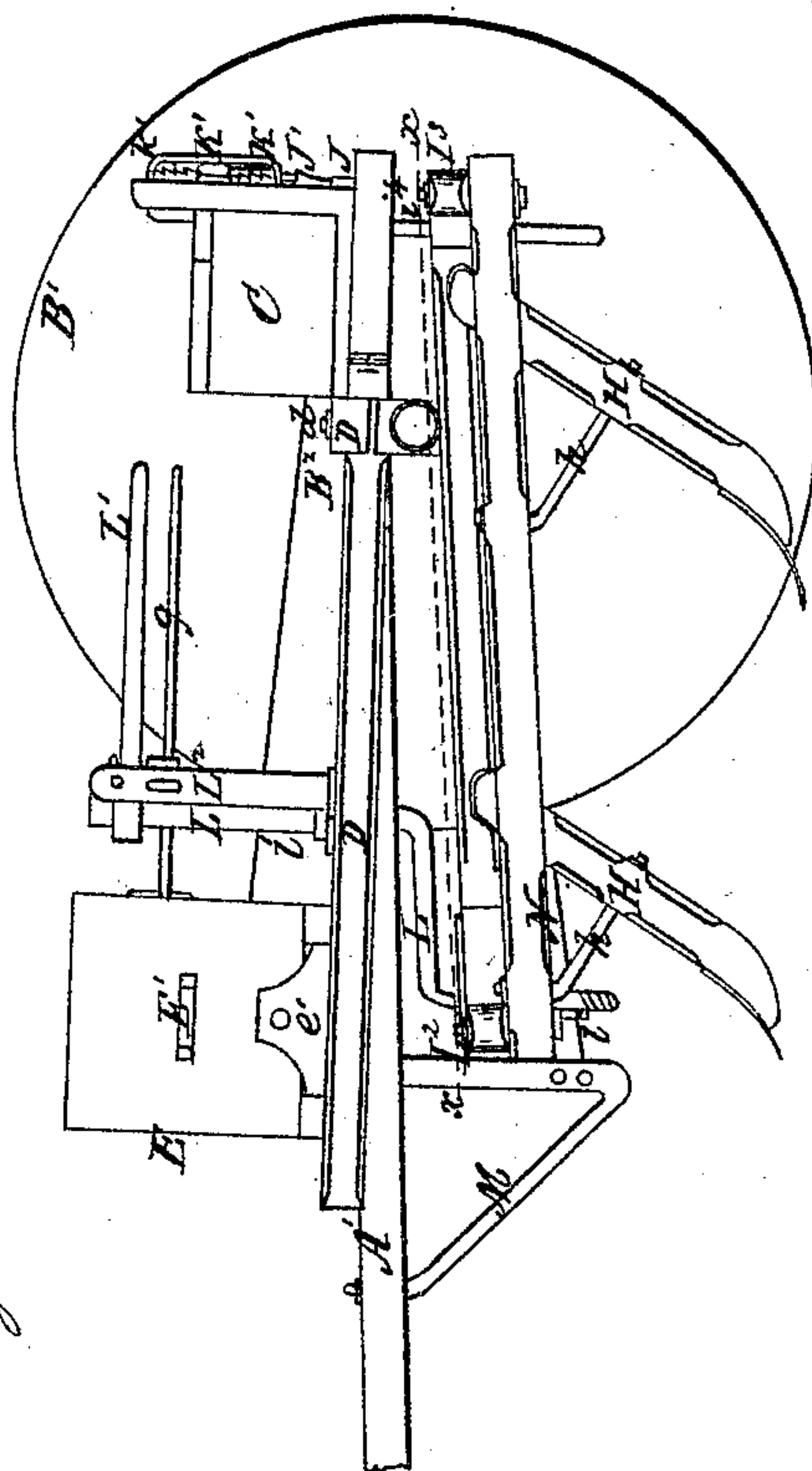
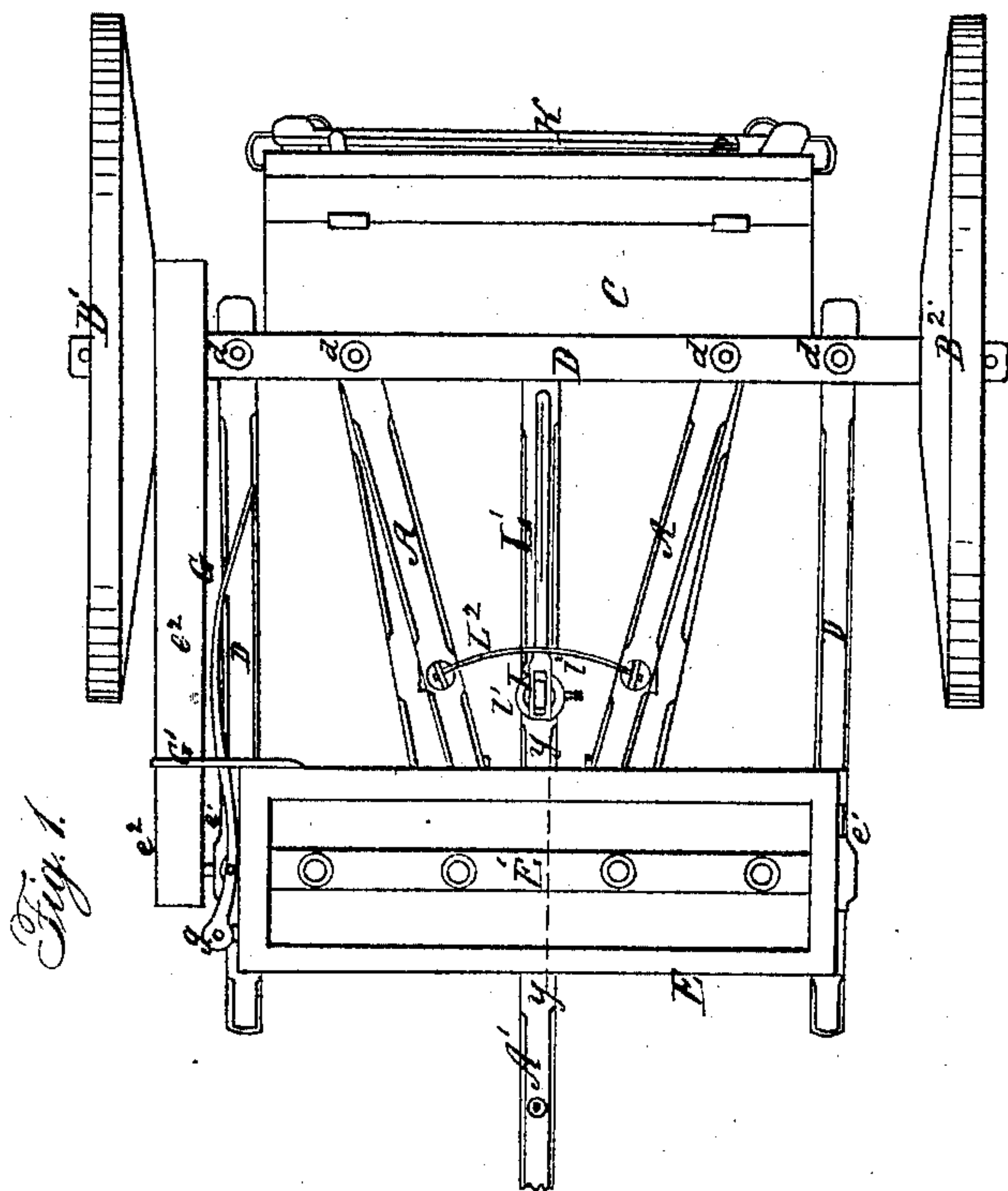
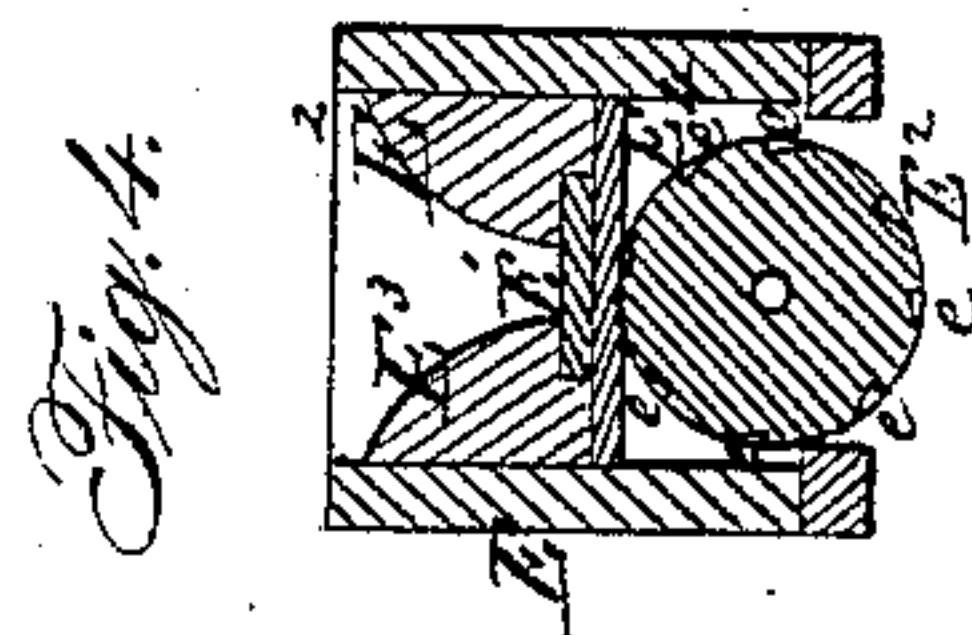
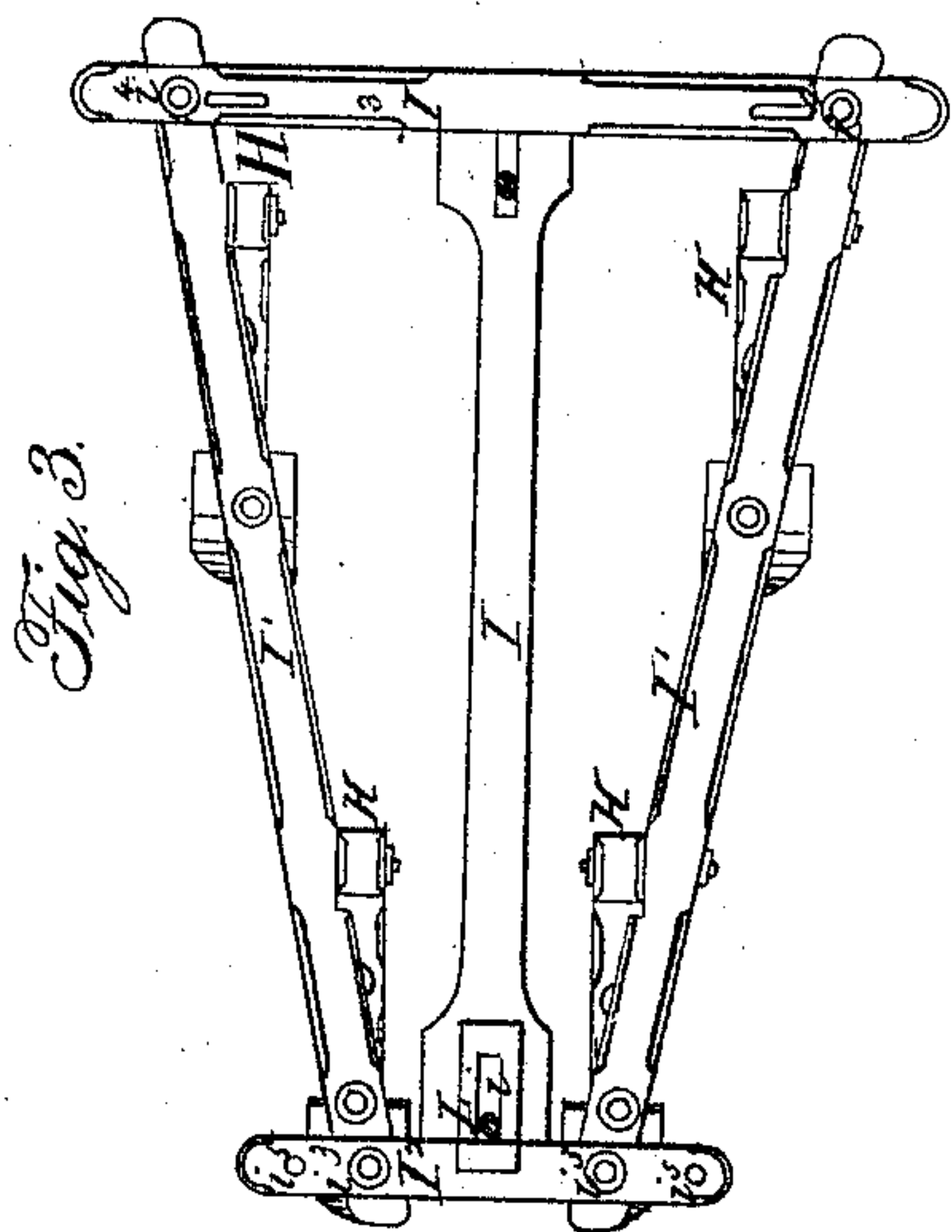


E. H. SAWYERS.

Wheel Cultivator.

No. 45,866.

Patented Jan. 10, 1865.



Witnesses:

G. D. Smae  
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# UNITED STATES PATENT OFFICE.

E. H. SAWYERS, OF ORLEANS, IOWA.

## IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 45,866, dated January 10, 1865.

*To all whom it may concern:*

Be it known that I, E. H. SAWYERS, of Orleans, in the county of Appanoose and State of Iowa, have invented certain new and useful Improvements in Combined Cultivating and Seeding Machines; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of my combined cultivator and seeder. Fig. 2 is a side elevation of the same with the high wheel removed. Fig. 3 is a horizontal section in the line *x x*, Fig. 2. Fig. 4 is a section of the hopper in the line *y y*, Fig. 1.

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

The object of this invention is to produce a more effectual and durable implement for cultivating and sowing; and to this end I have made certain improvements, hereinafter described, in the cultivator for which Letters Patent were granted to me on the 24th day of February, 1863.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

In the accompanying drawings, *A A* represent the bounds of the main frame of the machine, which are joined at front to the central beam, *A'*, which is extended forward so as to constitute the tongue, the whole being supported by the axle *B*. The axle is mounted upon wheels *B' B''*, and the ends of the beams *A A*, which project backward from the axle, support a box or receptacle, *C*, for tools and any small implements which may be needed in the field when the cultivator is in operation, said box also forming a seat for the driver.

*D* may represent various parts of a frame, which, by means of screw-bolts *d*, is secured at its respective front and rear ends to the main frame and axle. Upon the front of the frame *D* is mounted a hopper, *E*, the construction and operation of which will be more particularly referred to presently.

*H H* are the plow-standards, which are bolted to a frame consisting of three longitudinal

bars, *I I' I'*, and two connecting-bars, *I<sup>2</sup> I<sup>3</sup>*, these connecting-bars being secured to the upper sides of bars *I I' I'* by bolts *i<sup>3</sup> i<sup>4</sup>*, so as to avoid the necessity of employing long plow-standards. The bar *I<sup>2</sup>* is provided with a series of apertures, *i<sup>5</sup>*, all of which are adapted to receive the bolts *i<sup>3</sup>*, and thus admit of the lateral adjustment of the beams *I' I'* to any desired extent. This cultivator-frame is sustained at its rear end by means of links *J* and a hanger, *J'*, the latter being pivoted in the center of a lever, *K*, which is fulcrumed upon the box *C*. At its other end the lever *K* rests in the teeth of a rack, *K'*, securely affixed to the box *C*, and the lever moves within a metallic guide, *k'*, which may constitute the means for attaching the rack *K'*. The free end of the lever *K* occupies a position in which it may be conveniently reached by the driver from his seat *C*, and this lever enables him to elevate or lower the rear end of the cultivator-frame *I I' I'* at will, the rack *K'* retaining the lever in any position in which it may be placed and adapting said rear end to be adjusted with precision.

*L* represents a shaft, which passes through the central beam, *A'*, of the main frame, and which is formed like a crank at its lower end, where it passes through a slot, *i*, in the bar *I* of the cultivator-frame, in which slot it may be secured by an adjustable nut, *l*, the shaft being threaded at its lower end to receive said nut.

*l'* is a collar or nut fitted upon the vertical portion of the shaft *L*, which extends above the main frame, and the position of this collar may be varied upon the shaft by means of a set-screw, *l<sup>2</sup>*, in order to adjust the front end of the cultivator-frame simultaneously with the adjustment of its rear end by the lever *K*.

*L'* is a lever, jointed to the upper end of the shaft *L*, and having its fulcrum upon a metallic frame, *L<sup>2</sup>*, which is rigidly mounted upon the main frame of the machine. This lever *L'* enables the driver to move the cultivator-frame laterally with expedition, so that no irregular plants may be uprooted by the plows, nor the latter permitted to come in contact with immovable obstacles. The oblong slot *i* in the cultivator-frame is of such length that when the shaft *L* is turned its lower end is permitted to gradually move in closer proximity with



the transverse center of the cultivator-frame, and thus the lateral movement of the cultivator-frame increases for a given movement of the lever  $L'$  in a ratio governed by the variation in position which the lower end of the shaft  $L$  undergoes relatively to the transverse center of the cultivator-frame.

The plow-standards  $H$   $H$  are secured to the inner sides of the bars  $I$ , and the brace-rods  $h$ , by means of nuts  $h^2$ , are fastened in the respective standards and in the bars  $I$  at points any suitable distance in advance of the upper ends of the said standards. The brace-rods  $h$ , together with the plow-standards, occupy the same vertical plane as the central beam,  $I'$ , so that when the plows meet with resistance they will be braced straightforward—or, in other words, the brace-rods  $h$  will be entirely free from any lateral strain which they might be subjected to were they arranged obliquely to the central bar,  $I'$ ; and hence it is apparent that the way in which I arrange or apply the brace-rods upon an angular cultivator-frame adapts them to withstand as great tensional strain as similar brace rods employed in connection with rectangular frames.

$M$  may represent an angular shaft bent in the form of a knee, and having its vertical position rigidly inserted into the central beam,  $A'$ , it being designed to attach its inclined portion to the tongue in any suitable way, so that when the machine is started forward the draft will be applied to the shaft  $M$  also, and this shaft transmits the draft through the medium of a rod,  $N$ , to the rear and heavier part of the machine. This draft-rod  $N$ , at its forward end, is attached to and near the lower end of the shaft  $M$ , and at its rear end it is attached to the beam  $I'$ , and as it passes below the cultivator-frame it may serve as a support therefor, in addition to the nut  $l$  on the lower end of the shaft  $L$ , and while serving in these capacities it will not interfere with the free lateral adjustment of the cultivator-frame.

The interior construction of the hopper  $E$  is clearly shown in Fig. 4. The slide  $E'$  is provided with apertures, through which the seed may pass in customary manner, and the slide is located at a considerable height above the seed-cylinder  $E^2$ , in order to allow the grain to scatter and be equally distributed upon the latter. The pieces  $E^3$   $E^4$  form ways for the slide  $E'$  to move in, the piece  $E^4$  being perforated in corresponding manner with the slide  $E'$ . In the cylinder  $E^2$  are formed grooves  $e$ , which constitute the pockets, and which extend from end to end of the cylinder. The cylinder is adapted to revolve on short shafts at its respective ends, and these shafts are journaled in metallic boxes  $e'$   $e'$ , secured to the side pieces the frame  $D$ . On one of the journals of the cylinder is keyed a band-pulley,  $e^2$ , which is rotated by a band from a pulley,  $B^2$ , formed concentrically upon the inner side of the driving-wheel  $B'$ .

$G$  is a lever, by turning which the driver may arrest or regulate the flow of seed with facility. This lever  $G$  is pivoted at its forward end to a lug,  $g$ , and it may be retained in any desired position by its being placed between the teeth of a rack,  $G'$ , secured to the hopper  $E$ .

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with the lever  $L'$  and shaft  $L$ , the oblong slot  $i$ , formed and employed in the manner and for the purpose specified.

2. The described arrangement of the adjustable cultivator-frame  $I$   $I'$   $I^2$   $I^3$ , the brace-rods  $h$ , angular shaft  $M$ , and draft-rod  $N$ , the whole being employed in the manner and for the purpose set forth.

E. H. SAWYERS.

Witnesses:

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