

W. P. DALE.
Cultivators.

No. 154,586.

Patented Sept. 1, 1874.

Fig. 1.

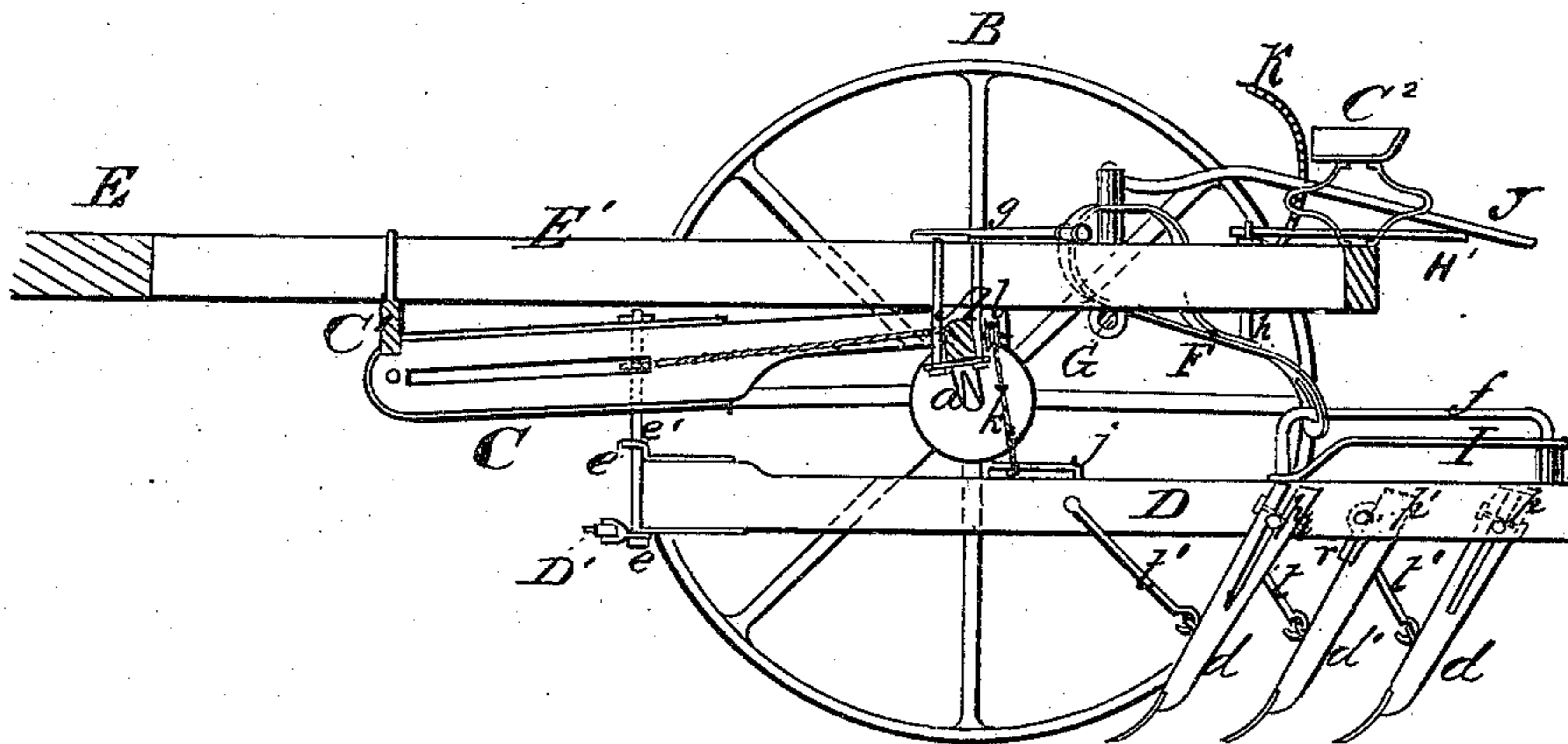
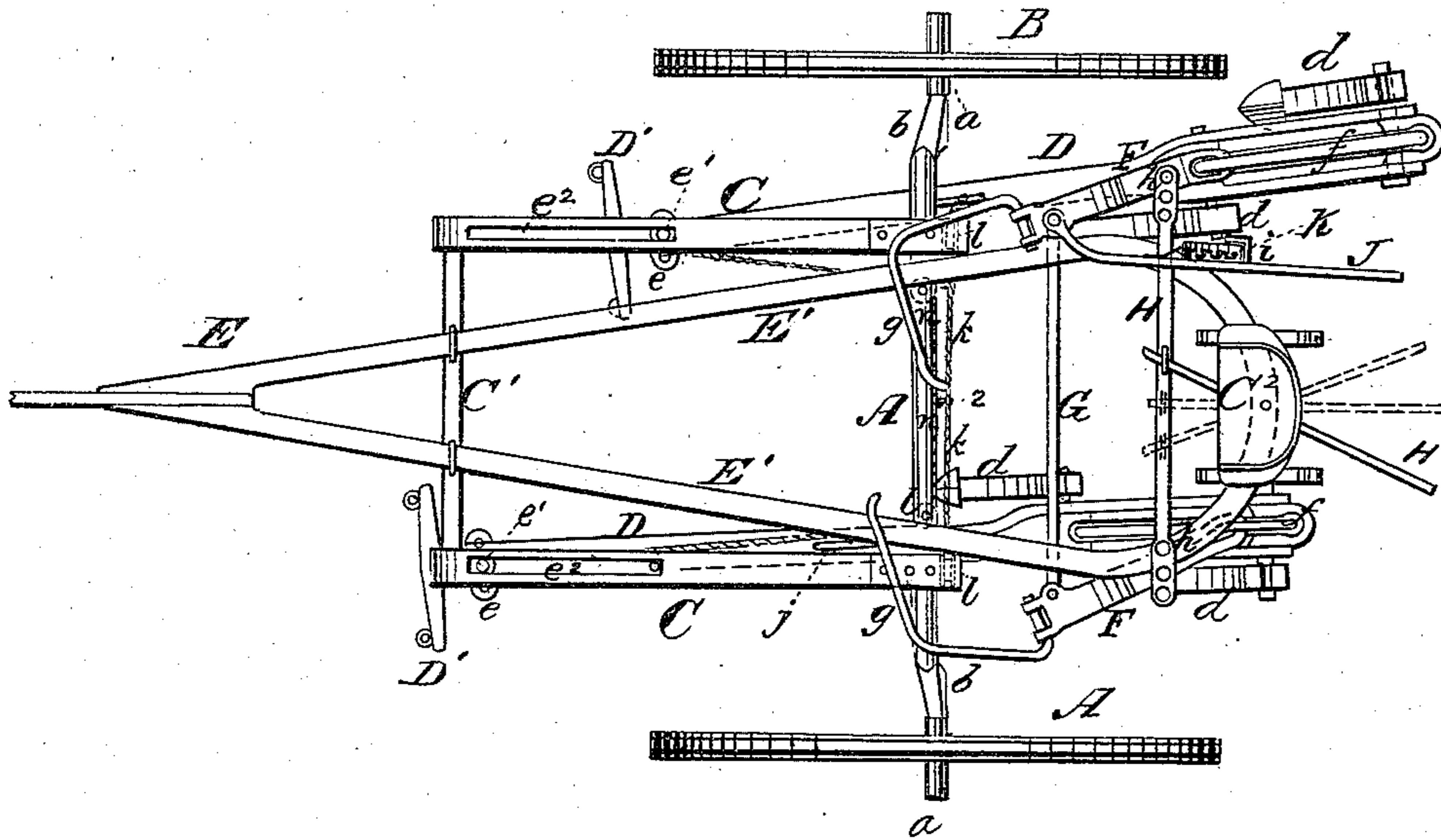


Fig. 2.



Witnesses

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Fig. 3

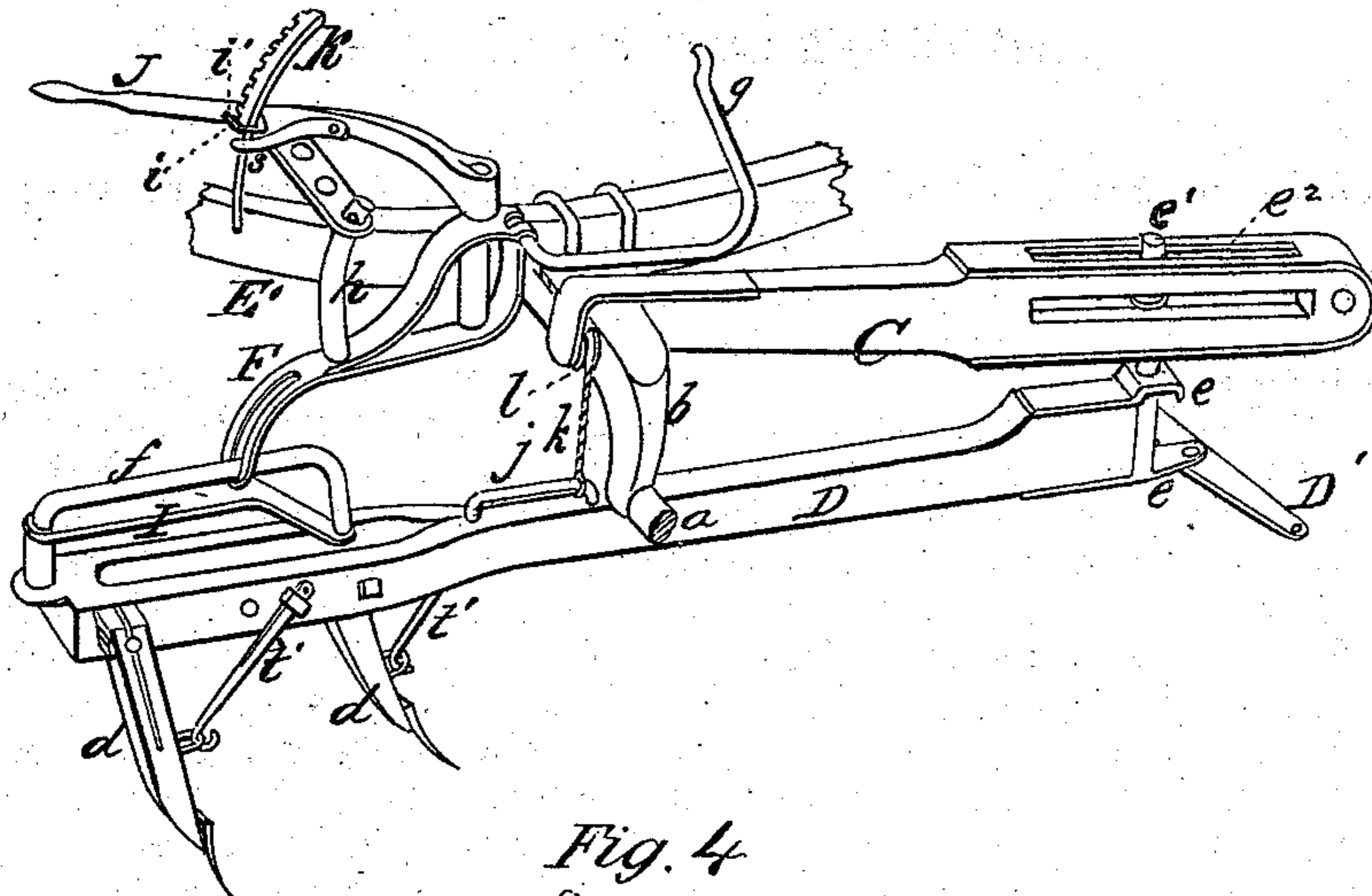


Fig. 4

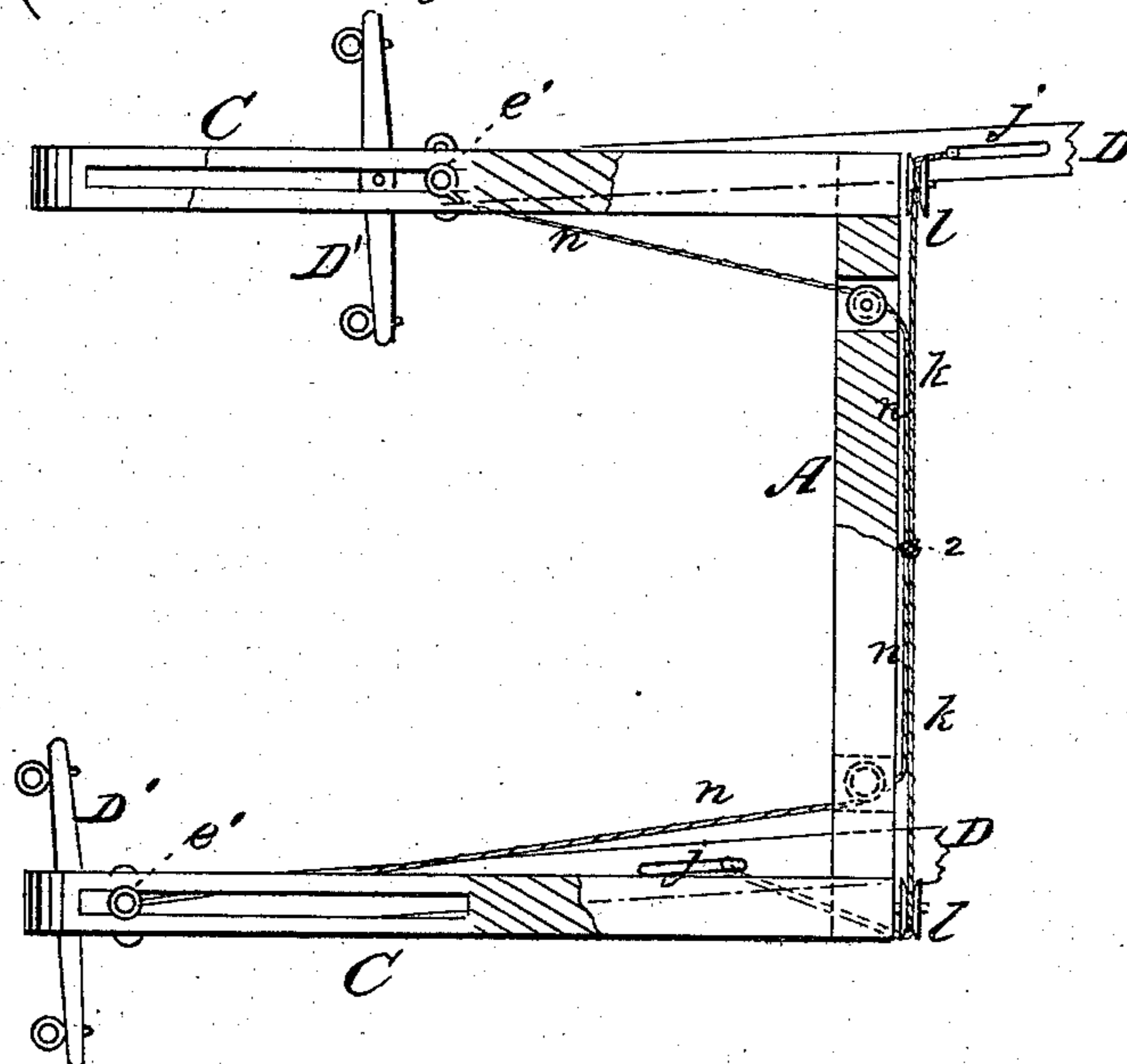
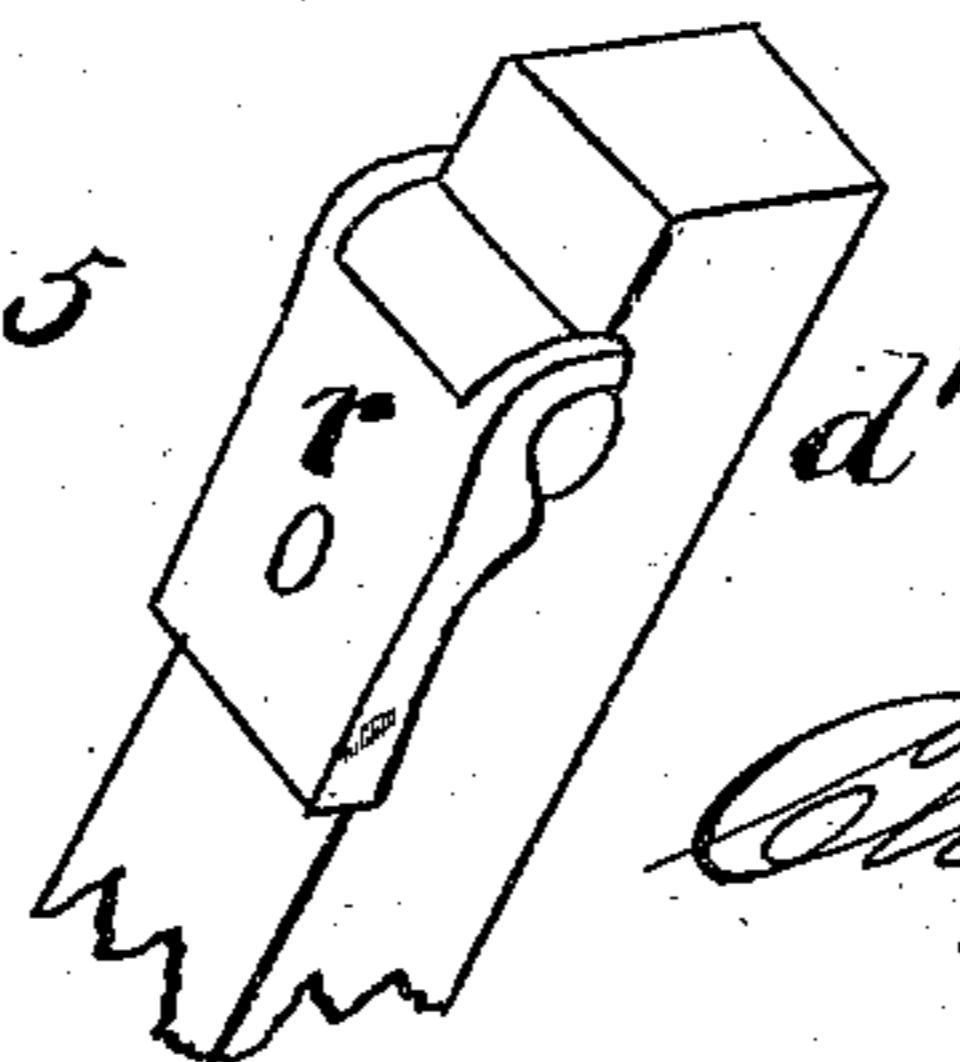


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM P. DALE, OF AGRICULTURAL COLLEGE, PENNSYLVANIA.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **154,586**, dated September 1, 1874; application filed February 21, 1874.

To all whom it may concern:

Be it known that I, WILLIAM P. DALE, of Agricultural College, in the county of Centre and State of Pennsylvania, have invented a new and valuable Improvement in Cultivators; 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 drawing is a representation of a sectional view of my cultivator. Fig. 2 is a plan view of the same. Figs. 3, 4, and 5 are detail views of the same.

This invention has relation to machines which are especially designed for cultivating rocky land, wherein it is desired to allow the shovels to yield backward without breaking or deranging the machine in the event of the shovels striking an obstruction.

The following is a description of my improvements:

In the annexed drawings, A designates the axle-tree of two transporting-wheels, B B, and *a a* are short axles, which are formed on clasps *b*, which are rigidly secured to the front and rear sides of the axle-tree A, and so shaped as to raise the axle-tree above the short axles *a*, as shown in Fig. 1. C C are two arms, which are rigidly secured to the axle-tree, and which project therefrom at right angles, and are connected together at their front ends by means of a cross-bar, C¹. E is the draft-pole, which is rigidly secured between the front ends of hounds E', which latter are formed of one piece of wood, steamed and bent in the form shown in Fig. 2. The hounds E' are rigidly secured by clips to the cross-bar C¹ and axle-tree A, and are extended back of the axle-tree, where they support a driver's seat, C². D D are the beams, which are suspended below the main frame, and which have secured to them, at and near their rear ends, shovel-carrying standards *d d d'*. The front ends of these beams D D have clevis-plates *e e* secured to their upper and lower sides, through which pivot-rods pass vertically. These rods *e¹ e¹* pass up through slots *e² e²* made longitudinally and vertically through the arms C C, at which points they are strengthened by facing-plates,

as shown in the drawings. The rods *e¹ e¹* have pins through them, which rest on top of the arms C C, and thus suspend these beams, but allow them free endwise play. To the lower ends of the rods *e¹ e¹* I pivot single-trees D' D', to which the animals are hitched. To the upper sides and at the rear ends of the beams D D staples *f f* are rigidly secured, which staples are as long or longer than the oblong slots *e²* through the front ends of the arms C. These staples *f f* pass through oblong slots, which are made through the rear curved ends of two laterally-vibrating arms, F F, which arms are pivoted to the upturned ends of a transverse rocking bar, G, having its bearings on the hounds E' in rear of axle A. The front pivoted ends of arms F F are looped and have curved treadles *g g* pivoted to them, by which the driver with his feet can give a lateral vibrating motion to the rear ends of the beams D D. H is a connecting-rod, having a number of holes through its ends for receiving studs *h h* on the arms F F in rear of their pivotal connections. This rod H connects together the two arms F F and the beams to which these arms are attached, so that these beams are moved laterally together. By means of the several holes through the ends of connecting-rod H the rear ends of the beams D D can be adjusted farther apart or nearer to each other; and, by means of a hand-lever, H', which has its fulcrum on the rear extremity of the hounds, a person walking behind the machine can give lateral movements to the rear ends of the beams D, and thus guide the shovels along the rows of plants. I I designate guards, which are secured at their ends to the staples *f f*, the rear portions of which guards are parallel to the beams D, but their front ends are inclined. The parallel portions of these guards are in close relation to the upper parallel portions of the staples, so that the guards, by bearing upwardly against the slotted ends of the arms F, keep the shovels down to their work, but when the beams D (either one of them) are moved back to their fullest extent, the guards I no longer arrest their upward movement, and the slots in the ends of the arms F will allow them to rise for the purpose of clearing their shovels from any obstruction. To the right hand of

the upturned portion of the oscillating bar G a hand-lever, J, is pivoted, which extends backwardly alongside of a curved rack-bar, K, rising from the hounds E', and is connected to this bar by means of a staple, *i*, and a spring, *s*, and a tooth, *i'*. The spring *s* holds the tooth *i'* and lever J in gear with the rack-bar K, and the staple *i* is of such length as will allow the attendant to release the tooth *i'* from the rack-teeth. By means of lever J the attendant, whether he be riding or walking, can raise the shovels free from the ground, or adjust them in working position. In front of the staples *f f*, and rigidly secured to the beams D D, are staples, *j j*, to which chains *k k* are attached by loosely-sliding rings. These chains are carried up and over pulleys *l l* applied to the rear side of the axle A, and have attached to them, at 2, chains *n n*, which latter pass forward through the axle-tree A, and are attached to the vertical pivot-rods *e¹* by means of rings which play in grooves made longitudinally and horizontally through the arms C C. It will thus be seen that the chains *k k* and *n n* act as equalizing draft-chains, and that in the event of the shovel on one of the beams D becoming arrested by an obstruction in their path, the power of the animal drawing on the other beam D will operate to lift the obstructed shovel until it is free of the obstruction. If it is desired to have what I denominate a stiff machine, I introduce a pin through the left or right hand arm in rear of the suspension-rod *e¹* of the beam. This pin will arrest the forward movement of the beam, whose rod, *e¹*, it is arranged in front of, and the equalizing operation of the chains above explained will not be brought into play. The rear portions of the cultivator-beams are bifurcated, and are secured together by transverse bolts *p*, and interposed blocks, so as to leave a space between the forked ends of each beam, in which space the intermediate shovel-standard is confined. These shovel-carrying standards *d'*, which are applied between the forked ends of the beams D, are secured to transverse bars *p'* by means of metal plates *r*, which are flanged on their lateral edges, and constructed with half-round grooves at their upper ends, as shown in Fig. 5. These plates *r* are bolted firmly to the said

standards, so that their grooved ends embrace the bars *p'*. The standards *d' d'* are further secured to their beams D D by means of diagonal braces *t t*, having several holes through their upper ends, which receive pins that pass into the said beams. The shovel-standards *d' d'* are thus adjustable at any desired angle or pitch. The standards *d d*, which are outside of the beams D, are clamped on the extended portions of the bolts *p*, and braced by rods *t' t'*, in the same manner as the intermediate shovel-standards *d' d'* are braced.

When a "stiff machine" is desired, as above referred to, the front end of one of the chains *n* is detached from its rod *e¹*, and passed through a staple, which will be secured to one of the cultivator-beams, and to such chain a single-tree, D', will be attached. The animals will, under this arrangement, draw directly from the axle A.

What I claim as new is—

1. In a cultivator, the beams D D pivoted at their front ends to rods *e¹*, which pass through slots *e²* in arms C, in combination with laterally-vibrating arms F, and staples *f*, which suspend the rear ends of said beams, substantially as described.

2. The beams D, hung so as to be movable longitudinally, as described, and having single-trees connected to their front ends, in combination with the chains *k n*, arranged as described.

3. The guards I I, staples *f f*, and plow-beams D D, arranged to be movable, as described, in combination with the laterally and vertically vibrating arms F, connected by slots to said staples *f f*, substantially as set forth.

4. The laterally and vertically vibrating arms F, with studs *h*, suspending the rear ends of plow-beams D, in combination with the pivoted treadles *g*, and the perforated connecting-rod H, substantially as shown and described.

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

WILLIAM P. DALE.

Witnesses:

WM. A. GATES,
JOS. GATES.