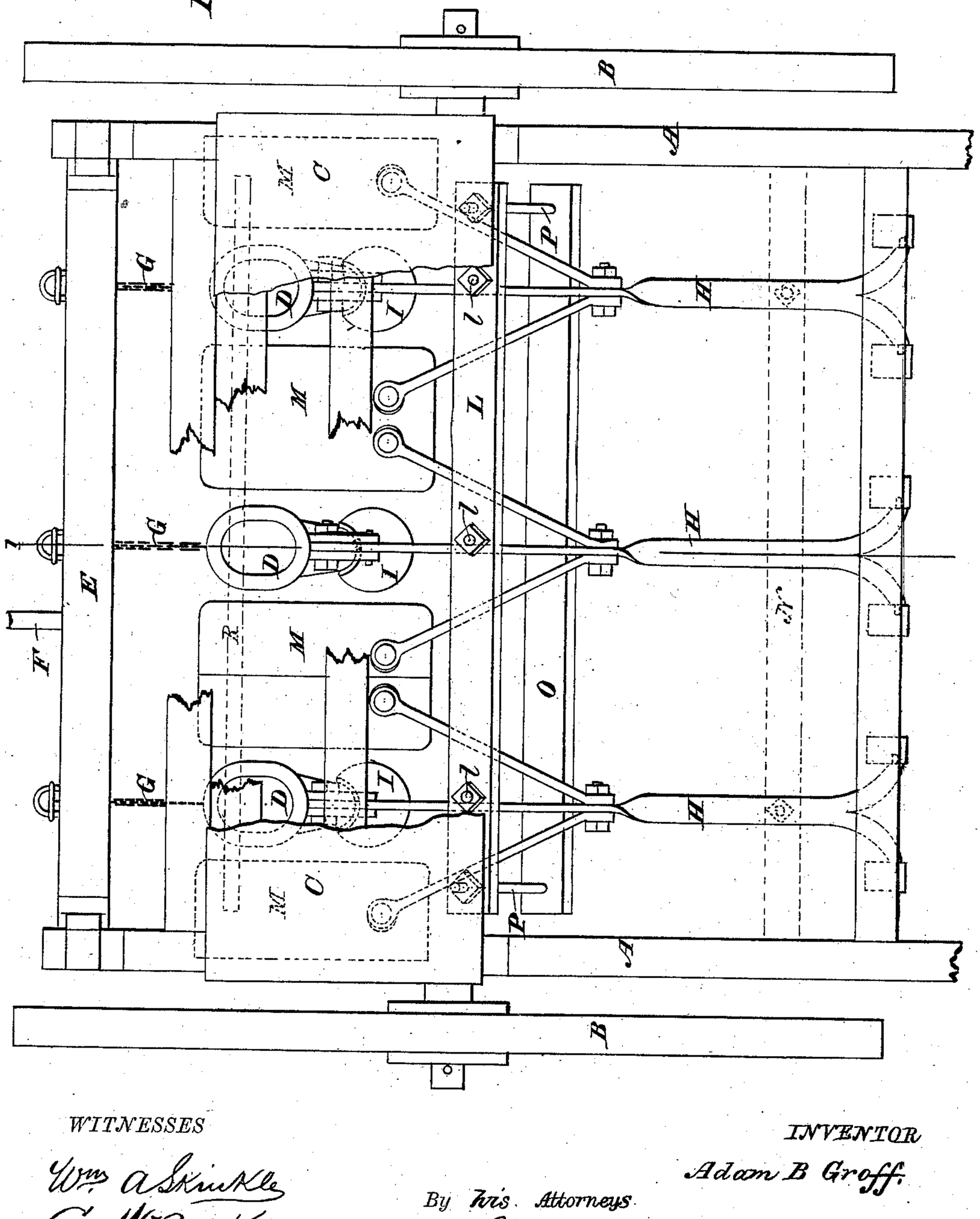
3 Sheets—Sheet 1.

A. B. GROFF.

COMBINED SEEDER AND CULTIVATOR.

No. 194,757. Patented Aug. 28, 1877.

Fig 1



WITNESSES

Wm. A Skinkle

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Fig 2.

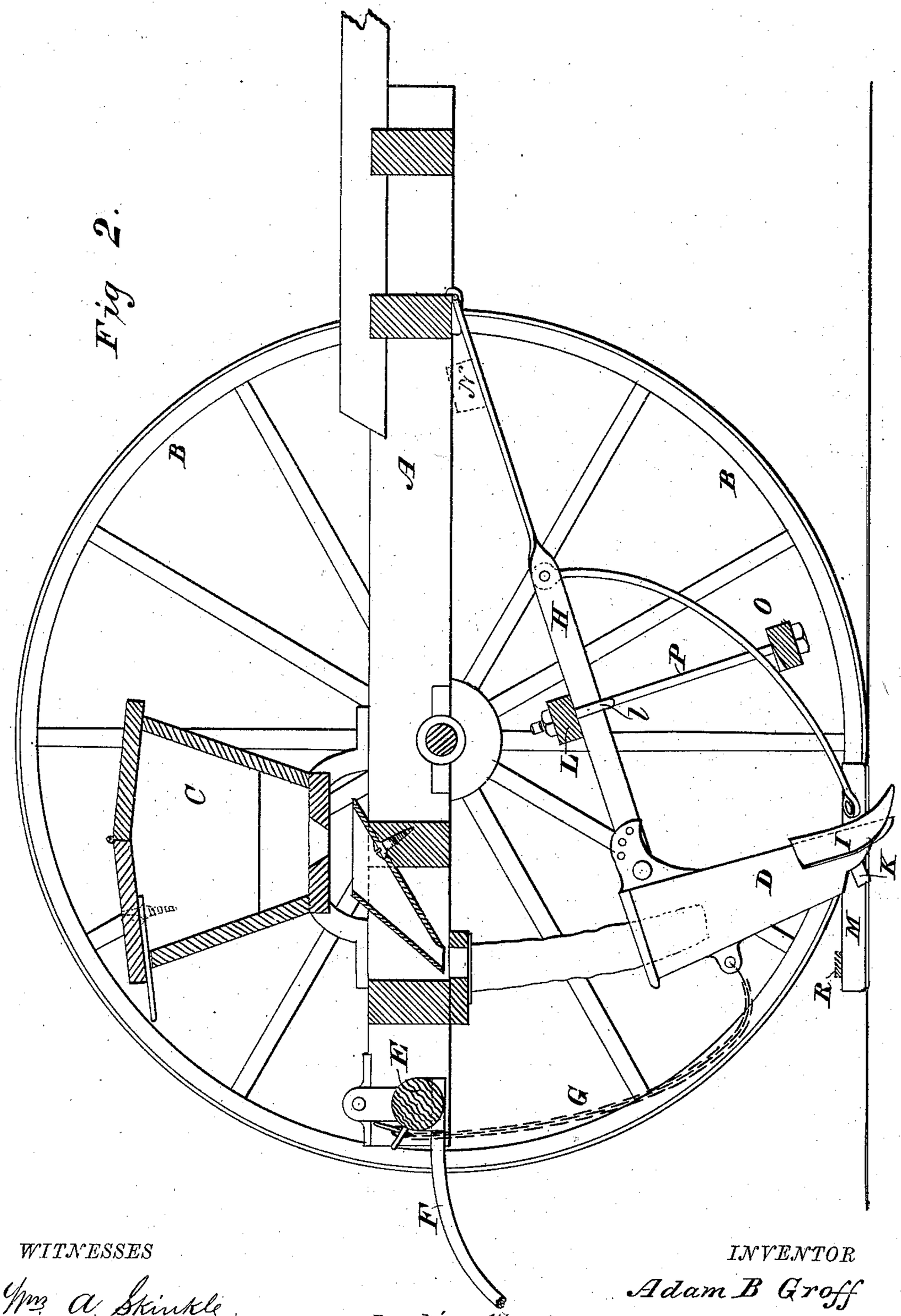

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Fig 3

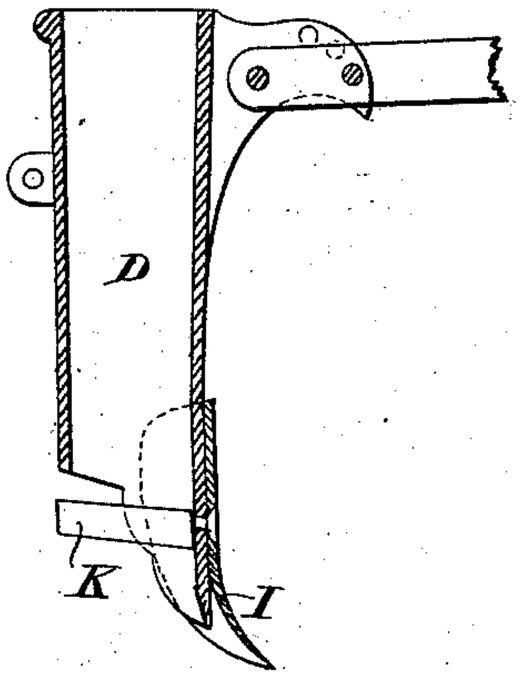


Fig 4

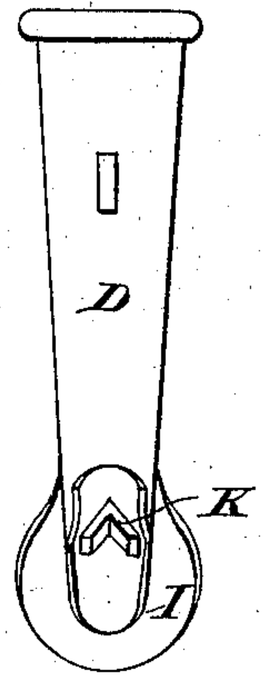


Fig 5

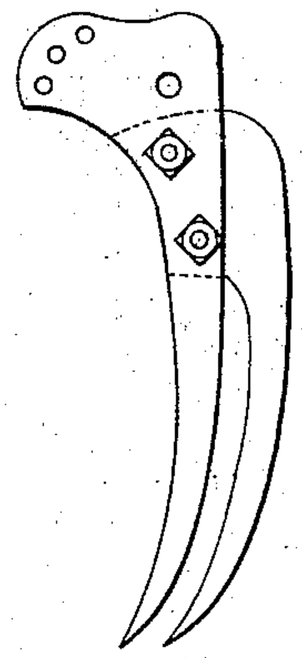


Fig 6

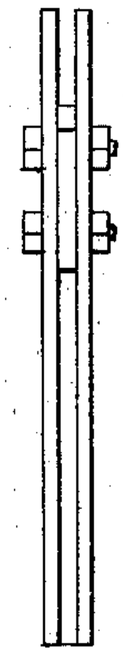


Fig 7

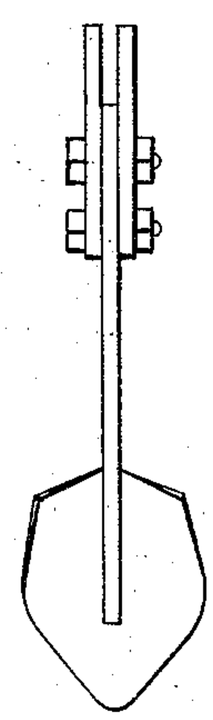
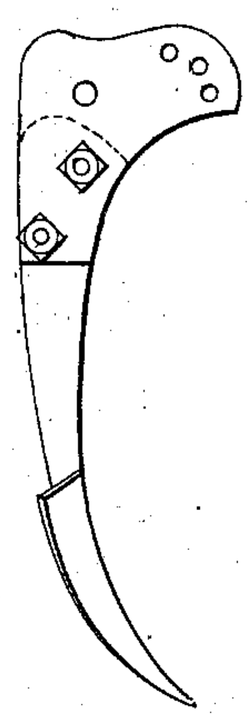


Fig 8



WITNESSES

Wm A Skinkle

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INVENTOR

By his Attorneys Adam B Groff.

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UNITED STATES PATENT OFFICE.

ADAM B. GROFF, OF BAREVILLE, PENNSYLVANIA.

IMPROVEMENT IN COMBINED SEEDER AND CULTIVATOR.

Specification forming part of Letters Patent No. **194,757**, dated August 28, 1877; application filed July 5, 1877.

To all whom it may concern:

Be it known that I, ADAM B. GROFF, of Bareville, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in a Combined Seeder and Cultivator, of which the following is a specification that will enable those skilled in the art to make and use my invention, reference being had to the accompanying drawings.

The object of my invention is to improve the construction of that class of machines which, by an alternation of appliances, serve, respectively, to seed and afterward to cultivate grain.

My invention consists in the construction and arrangement of the devices hereinafter specifically described, and definitely set forth in my claims.

In the accompanying drawings, Figure 1 is a plan view of my combined seeder and cultivator, with portions of the seed-box and cross-beams broken away to show the parts lying under them more fully. Fig. 2 is a vertical longitudinal section on the line 11 of Fig. 1. Fig. 3 is a vertical central section through one of the seed-boots. Fig. 4 is a rear elevation of the same. Figs. 5 and 6 are views, in elevation, of one form of a scarifying cultivator-tooth; and Figs. 7 and 8 are similar views of detachable cultivator-teeth employed when the machine is used as a cultivator.

A indicates the main frame; B, the wheels; C, the seed-box, and D the boots or droppers, of the ordinary construction. E indicates a lifting-beam pivoted to the side pieces of the main frame, and provided with a handle, F, and lifting-chains G, secured, at their lower ends, to the cultivator-teeth or the boots, as the case may be. The boots are detachably secured on the rear ends of the drag-bars H, which are pivoted to the front portion of the main frame. I provide the boots with furrowing-blades or teeth I, and with spreaders or distributers K. These distributers are secured to the front sides of the interiors of the boots, passing through and being riveted to secure the furrowing-blades in place. They form V-shaped rearward projections, against which the seed strikes in its descent, and is spread into the trenches formed by the teeth. It is essential that the boots be held rigidly in place and at uniform distances apart. To accomplish this object I provide a cross-bar, L, through which pass hooks *l*, that clasp the drag-bars and prevent lateral movement. The boots are provided with ears projecting in front, and clasping the rear ends of the drag-bars. These ears and the ends of the drag-bars are provided with bolt-holes, so that the boots may be adjusted to vary their pitch.

When it is desired to use the machine for cultivating, the boots are usually removed and cultivator-teeth, provided with similar ears and bolt-holes, are substituted for them, and connected with the lifting-chains and drag-bars. It is obvious that the boots, with their furrowing-blades or teeth, might be used to cultivate, if desired, but I prefer to remove them and replace them with cultivator-teeth, such as shown in Figs. 7 and 8. As the rows of grain are usually so near together that they would be in danger of being covered by the earth thrown by the cultivator-teeth unless some means of prevention were provided, I therefore employ the protectors M between the teeth to shield the grain. These protectors I prefer to form V-shaped, and I connect them, by means of pivoted arms, to the drag-bars or to the front of the main frame. If desired, a detachable cross-bar, N, as shown in dotted lines, may be provided and secured in place by a bolt at each end, to which cross-bar the protector-rods may be hinged. The detachable cross-bar may be secured by its two end bolts either to the main frame or to the outside drag-bars. When it is used it will not be necessary to unhinge the protector-rods, in order to remove the protectors from the machine, but will only be necessary to detach the cross-bar, when it and the protectors can be removed together. The protectors are, of course, only used for cultivating, and may be detached and removed for drilling.

In order that the protectors, which ride lightly over the rows of grain, may be raised simultaneously with the cultivator-teeth for turning around, or whenever desirable, I provide a lifting-bar, O, which I suspend from the rigid cross-bar L by detachable screw-rods P, or by any other suitable means. If desired, a connecting-strap, R, may be secured

along the edges of the protectors at their rear ends, in order to prevent them from swaying from side to side, as shown in dotted lines.

In order to form a cultivator-tooth that can be readily attached to the ends of the drag-bars in place of the boot, I provide an ear or projection on each side of the shank, as shown in Figs. 7 and 8, having suitable holes for attachment and adjustment upon the end of the drag-bar. I also form a peculiar cultivator-tooth of three parts or prongs, the two outside ones being provided with ears or projections as above described, and the center one constituting at once a shank for supporting the ears and a middle prong. This form of tooth is useful for harrowing or scarifying the soil when too dry or hard for the use of the ordinary tooth or blade.

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

1. The combination of the series of detachable and vertically-oscillating shields or protectors with the series of cultivator-teeth, and the frame supporting both, and the lifting mechanism, by means of which the whole can be raised up by the operator at will, substantially as described.

2. The combination of the rigid cross-bar, the adjustable lifting-bar, the adjustable screw-rods, and the drag-bar hooks, constituting the frame for rigidly securing the seeding-boots and cultivator-teeth at a uniform and proper distance apart, and for lifting the shields, substantially as described.

3. The detachable cross-bar, in combination with the pivoted rods and the shields, substantially as described.

In testimony whereof I have hereunto subscribed my name.

ADAM B. GROFF.

Witnesses:

E. BURKHOLDER,

H. C. SELDOMRIDGE.