J. S. BUTTERFIELD.

Cultivator.

No. 195,979. Patented Oct. 9, 1877.

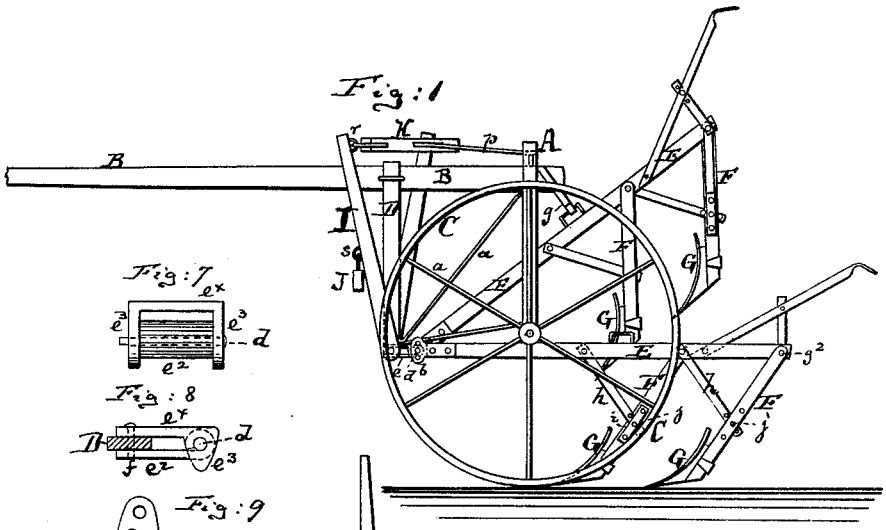

Fig: 1

Fig: 7

Fig: 8

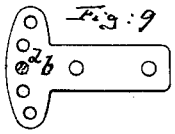

Fig: 9

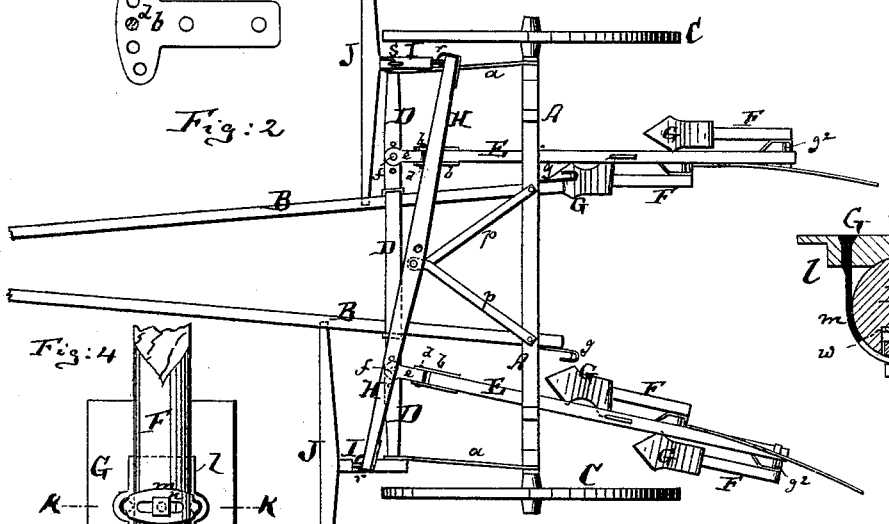

Fig: 2

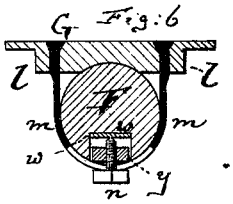

Fig: 6

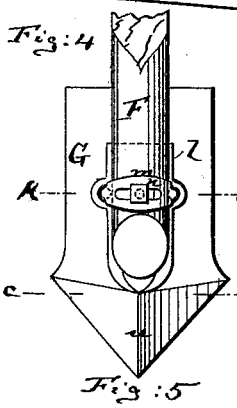

Fig: 4

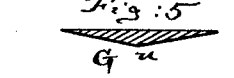

Fig: 5

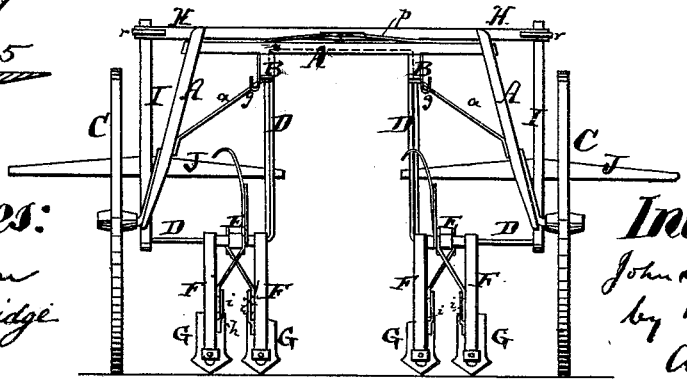

Fig: 3

Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN S. BUTTERFIELD, OF MENDON, MISSOURI.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **195,979,** dated October 9, 1877; application filed January 10, 1877.

To all whom it may concern:

Be it known that I, JOHN S. BUTTERFIELD, of Mendon, in the county of Chariton and State of Missouri, have invented a new and Improved Cultivator, of which the following is a specification:

Figure 1 is a side view, Fig. 2 a top view, and Fig. 3 a rear view, of my improved cultivator. Fig. 4 is a detail back view, on an enlarged scale, of one of the shovels, showing it fastened to a plow-standard. Fig. 5 is a cross-section on the line *c c*, Fig. 4; and Fig. 6, a cross-section on the line *k k*, Fig. 4. Figs. 7, 8, and 9 are detail views of the coupling that joins the plow-beams to the front cross-bar.

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

This invention has for its object to produce a light-draft, evenly-balanced, and perfectly-adjustable cultivator; and consists in improving the arrangement of the frame, of the draft appliances, couplings, and the construction and mode of fastening of the shovels, all as hereinafter more fully described.

The letter A in the drawing represents the axle of my improved cultivator. The same is raised in the middle, as shown in Fig. 3, to the height of the forked pole B, which is rigidly attached to the axle. The ends of the axle A rest in the hubs of the wheels C C. D is a cross-bar, also elevated in the middle, and placed over the forked pole at such a distance in front of the axle that it will be about in line with the front edges of the wheels.

The said cross-bar D is, by proper braces, *a a*, firmly connected to the axle A, to constitute, together with the same and with the pole B, the frame-work of the cultivator.

The ends of the cross-bar D are on a level, substantially, with the hubs of the wheels C, and serve as supports for the front ends of the plow-beams E E. Each of these beams—there being two shown in the drawing—carries at its front end a perforated segmental plate, *b*, (fully shown in Fig. 9,) and is, by a horizontal pin or bolt, *d*, connected to a peculiar double coupling-piece, *e*, that straddles the cross-bar D. This coupling-piece is composed of an upper plate, $e^{\times}$, and a lower plate, e^2, the upper plate $e^{\times}$ having downwardly-projecting ears e^3 e^3, which straddle the lower plate e^2, as clearly indicated in Figs. 7 and 8.

The lower plate e^2 is, at its rear end, looped around the pin *d*, as indicated in Fig. 8, and is confined laterally between the ears e^3 e^3. The bolt *d* passes through the loop of the plate e^2, through the ears e^3 e^3, and through the segmental plates *b b*.

A vertical pin or bolt, *f*, connects the coupling *e* to the cross-bar D by passing through the plates $e^{\times}$ and e^2, that are placed, respectively, upon and below the cross-bar D. Said cross-bar is perforated at different places, to allow the plow-beams to be adjusted at a suitable distance apart by placing the pins *f* wherever desired.

By tightening the vertical pin *f* the plates $e^{\times}$ and e^2 may be drawn tight against the cross-bar D, to prevent the plow-gangs from rocking, which is an important advantage.

By placing the pin *d* in a different hole of the plate *b* the depth of the plows can be nicely adjusted. Each plow-beam can be horizontally vibrated on the pin *f*, and vertically on the pin *d*, and is, moreover, by the coupling *b d e f*, adjustable both vertically and horizontally.

The hooks *g*, for holding the plow-beams raised while driving to and from the field, are attached to the forked pole at such proximity to the axle A that the pole will not be tilted by the elevation of the beams, but that, on the contrary, the entire cultivator will always be properly balanced.

The plow-standards F F are pivoted, by bolts g^2, to the plow-beams E, and are held at the proper angle thereto by brace-straps *h h*, that are also pivoted to the beams. The lower end of each brace-strap *h* is provided with a series of holes, and inserted in a loop, *i*, that is formed on the plow-beam, and the brace-strap is secured to such loop by a bolt, *j*, so as to render the plow-standard adjustable on the beam.

Each plow shovel or share G is made of cast-steel, and of such thickness in the middle at the back that it will form sufficient stock *l* for the standard to bear against, as in Fig. 6. Toward the point the share is cast with a central rib or ridge, *u*, at the back, as in Fig. 5, which will prevent it from rapidly wearing the point straight.

A strap, *m*, has its ends secured in the share or shovel G, and embraces the standard F, as shown in Fig. 6. It is slotted horizontally at the back of the standard, and a bolt, *n*, whose nut *y* is placed in an upright groove of the standard, passes through said slot of the strap, and bears against a bed-plate, *w*, that is secured in the groove of the standard. The nut *y* and block *n* secure the share at a suitable angle on the standard. By means of the slotted strap *m* and fastening-screw *n* the shovel can be placed to the front, right, or left of the standard, at pleasure. In the groove of the standard the nut and bolt, and with them the plowshare, may be vertically adjusted.

H is the evener-bar, pivoted, at *o*, in braces *p*, that project from the axle. Its length is nearly equal to the distance between the wheels. Its ends are, by links *r r*, joined to uprights I I, that are pivoted to the ends of the cross-bar D. The whiffletrees J J are, by suitable links, *s s*, hung to the pivoted uprights I.

By this arrangement I bring the draft of each horse nearly in line with the wheel behind it, the whiffletrees being at a convenient height, and yet jointed to an evener-bar that vibrates above the pole.

The entire apparatus is much narrower than any heretofore devised, as the whiffletrees extend beyond the wheels, and much stock is, consequently, economized in the construction of my cultivator.

The evener-bar H, it will be seen, is pivoted to the braces *p* at a point, *o*, which is behind the cross-bar D that unites with the plow-beams, so that I thus apply the draft to the axle virtually behind the point at which the plow-beams are secured. I thereby render the apparatus far more obedient to the handle than when, as heretofore, the plow-beams are pivoted to the apparatus in rear of the evener-bar.

I claim as my invention—

1. The coupling *e*, composed of the plate $e^{\times}$, having ears e^3 e^3, and of the lower plate e^2, which is looped around the bolt *d*, substantially as herein shown and described.

2. The combination of the plowshare G with the slotted strap *m*, which embraces the standard, and with the fastening-bolt *n*, inner bearing-plate *w*, and with the nut which is sunk into a groove in the standard, all arranged so that the screw *n* bears against the plate *w*, substantially as specified.

JOHN S. BUTTERFIELD.

Witnesses:
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