M. L. GORHAM.

Cultivators.

No. 154,666. Patented Sept. 1, 1874.

Fig. 1.

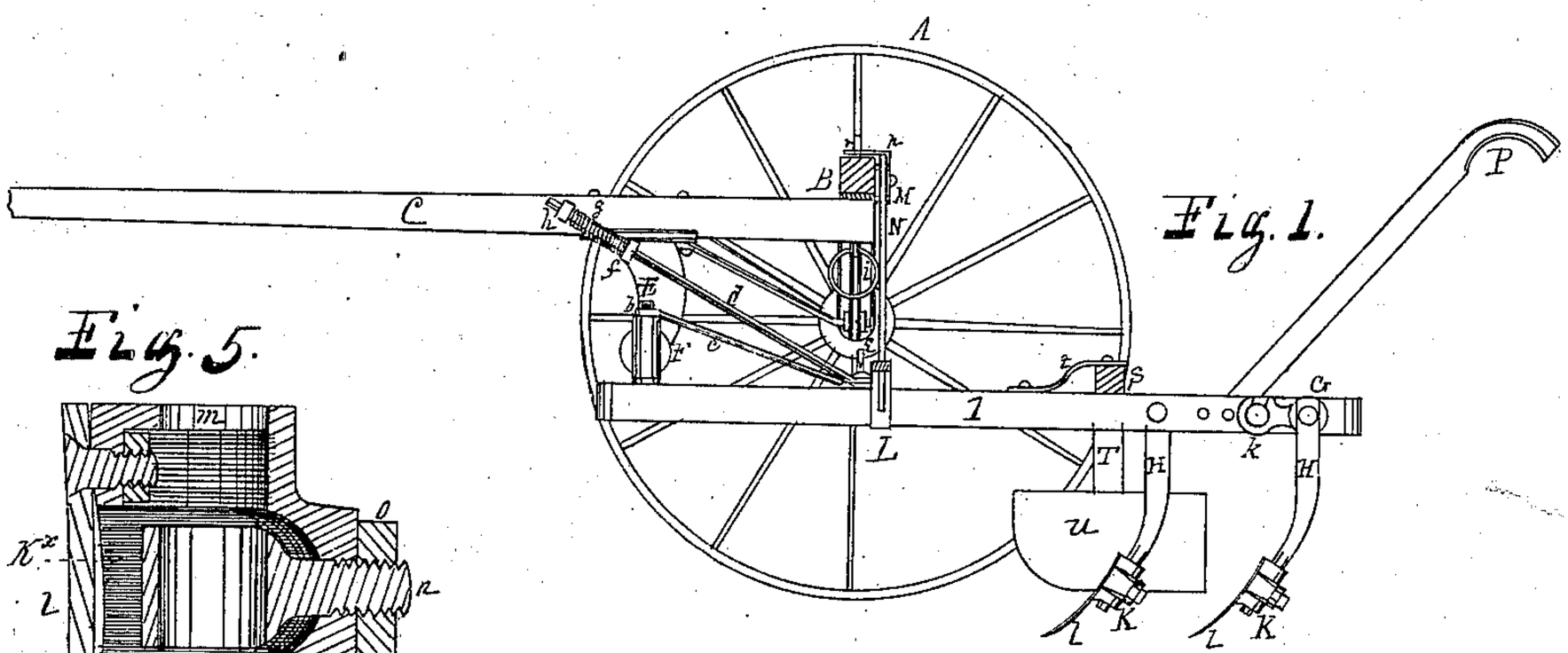


Fig. 5.

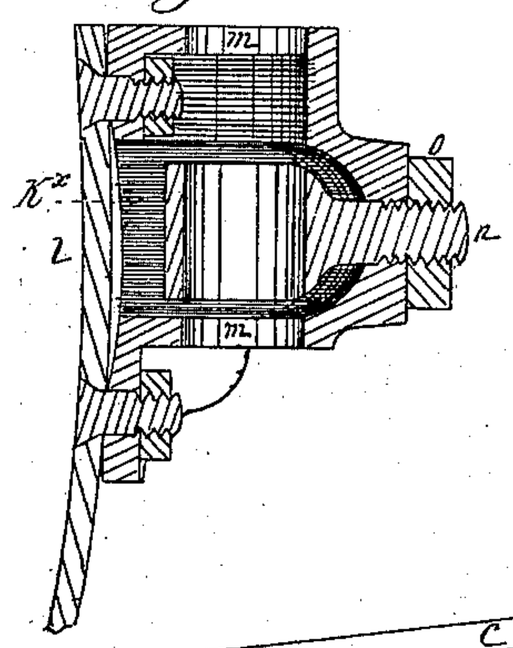


Fig. 2.

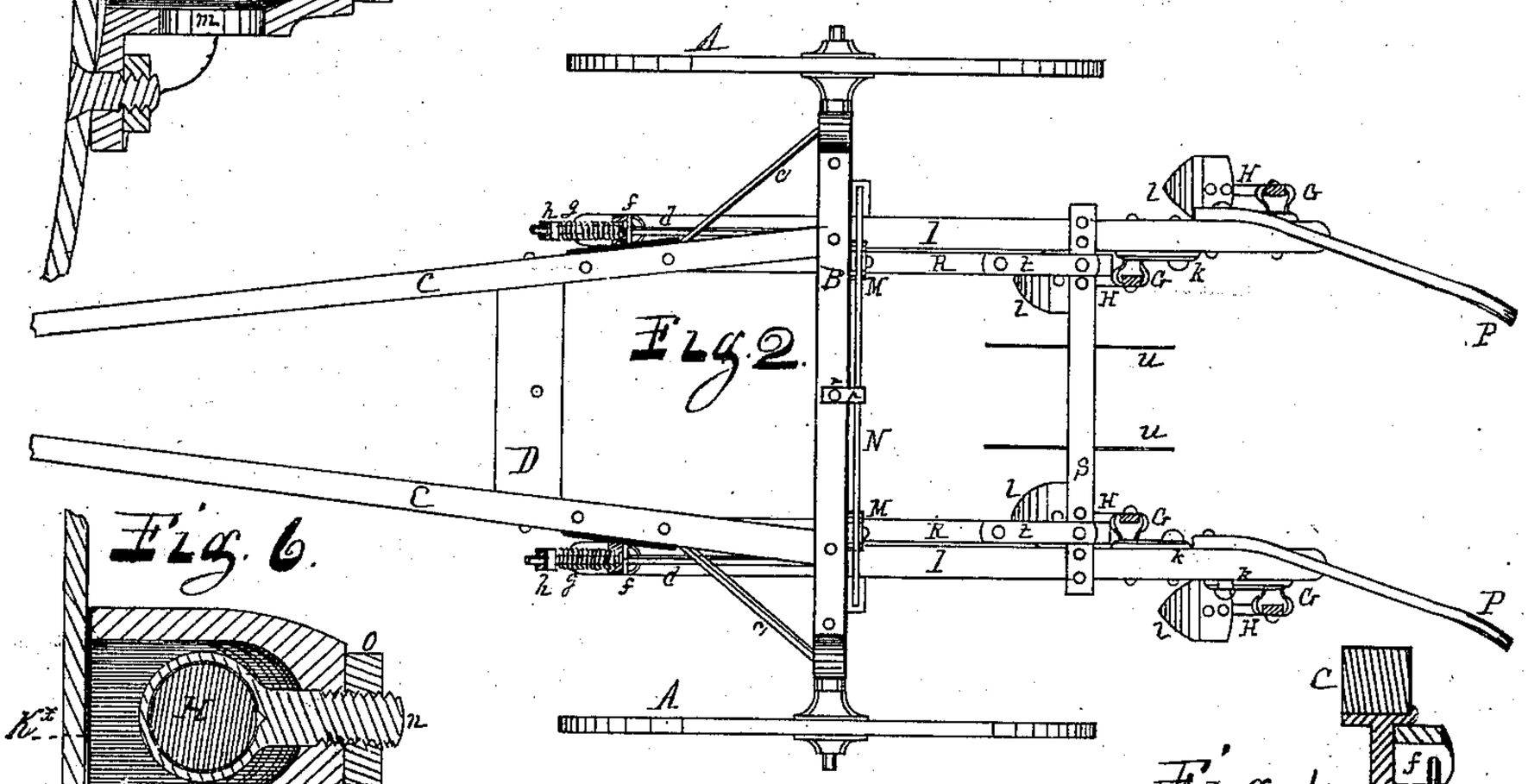


Fig. 6.

Fig. 7.

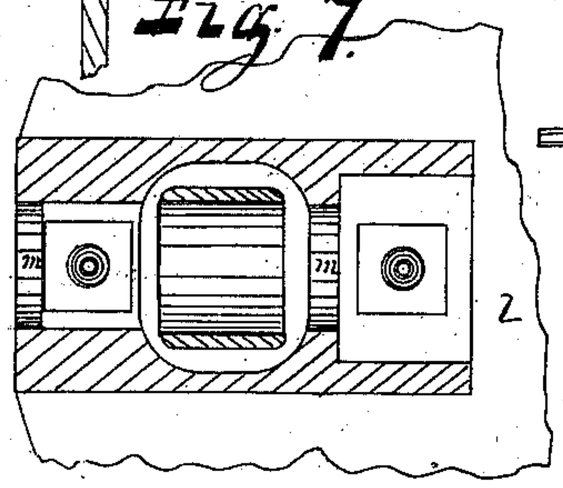


Fig. 3.

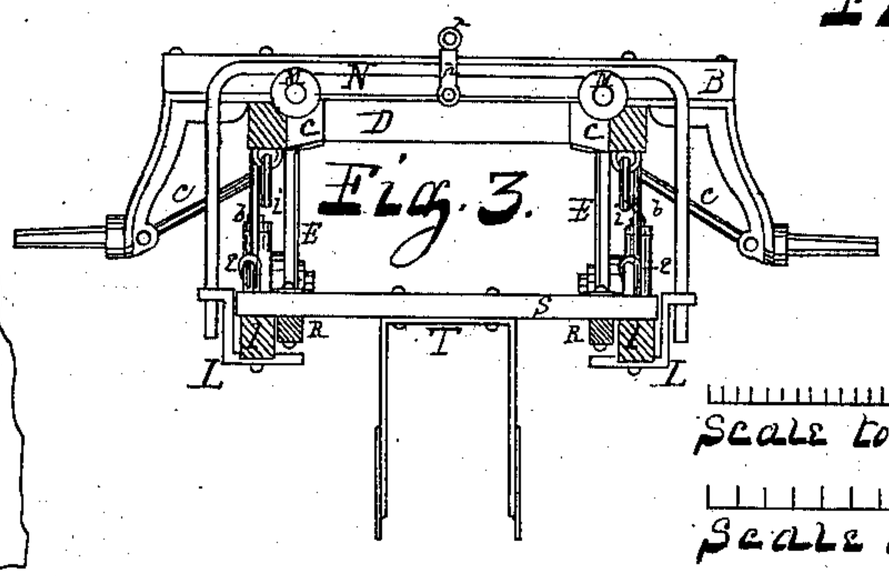
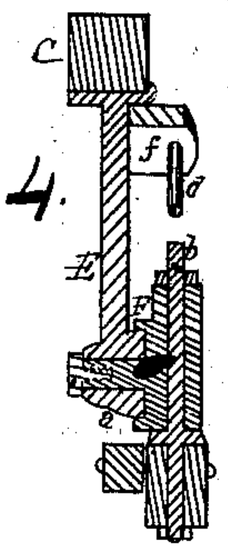


Fig. 4.



Scale to Figs. 1. 2 & 3.

Scale to Fig. 4.

Scale to Figs. 5. 6 & 7.

Witnesses.
E. N. J. Behel
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Inventor:
Marquis L. Gorham

UNITED STATES PATENT OFFICE.

MARQUIS L. GORHAM, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **154,666**, dated September 1, 1874; application filed May 17, 1872.

To all whom it may concern:

Be it known that I, MARQUIS L. GORHAM, of Rockford, in the county of Winnebago and State of Illinois, have invented certain Improvements in Cultivators, of which the following is a specification:

This invention relates to that class of cultivators known as wheeled straddle-row walking-cultivators; and consists of an improved device, by means of which the shovels are held and adjusted on the shovel-standards, an improved shield, and other improvements, which will hereinafter more fully appear.

In the drawings, Figure 1 is a side elevation, with one wheel and bent axle-arm omitted for the purpose of clearness. Fig. 2 is a plan view embodying my invention. Fig. 3 is a rear view, in which the shovels and their attachments to the drag-bars, the handles, and wheels are omitted. Fig. 4 is a transverse vertical section through the joint connection of the front ends of the drag-bars to the main frame. Fig. 5 is a longitudinal vertical central section of the shovel-holder. Fig. 6 is a transverse horizontal central section of the same. Fig. 7 is a lateral vertical central section of the same.

Carrying-wheels A receive and revolve on arms of raised axle B, to the under side of which, at suitable and equal distances from the ends thereof, are secured beams C, the forward ends of which meet and are secured to each other, and fitted to receive a neck-yoke. D is a cross-piece, framed into and secured between beams C forward of the axle, and is fitted to receive an evener on either its upper or under side. These parts are substantially the same as in Patent No. 121,613, issued to me, dated December 5, 1871. E are hangers, secured to the under side of beams C between the axle and cross-piece. Each hanger is provided with a vertical longitudinal disk, *a*, the center of which is bored at right angles to its plane. F are recessed disks, fitted to receive disks *a*, and are provided with central studs to enter the central holes in disks *a*, in which they are secured by screw-nuts or otherwise. These parts furnish the joint for the vertical movements of the drag-bars. The disks F are provided with vertical sockets on the side thereof opposite the recess, and receive the vertical studs *b*, which are secured to the forward ends of the drag-bars, and furnish the joint for the lateral movements thereof. *c* are brace-rods, fitted to receive the upper ends of studs *b* above sockets on disks F, and are secured in place by pins, which also hold the studs in place. The rear ends of braces *c*, in common with suspension-rods *d*, are secured to the drag-bars rearward of their joint connection with the hangers by hooked screw-bolts *e*. The forward ends of the suspension-rods *d* pass loosely through holes in ears *f*, that are fixed in the sides of hangers E, and beyond far enough to receive a spiral spring, *g*, and the extreme end is furnished with a screw-thread and a screw-nut, *h*; and, by turning the screw-nut down upon the spring and contracting it between the nut *h* and ear *f*, it will act to suspend the drag-bars to any height, or to regulate the depth at which the shovels or plows shall work. The ears *f*, against which the spring *g* bears, are placed in the hangers E, above and over or nearly over the point where the drag-bars are hinged at their forward ends. The rods *d* are used also to assist in raising the drag-bars to suspend them, by hook-connections with rings *i*, to the axle B, hooks *e* and rings *i* having been previously provided for the purpose of suspending the plows in a fixed position when turning and in moving the machine. Studs G are fitted to receive the upper ends of standards H, and are secured in place on rear portion of drag-bars I by suitable bolts, which pass through standards H, studs G, and drag-bars I. The studs G are provided with arms *k*, fitted with vertical radial slots to receive tension-bolts, which hold them in place on the drag-bars in such a manner that when the shovels come in contact with obstinate obstructions the arms will slide from under the tension-bolts, and the shovels will be thrown back without injury. K K are blocks, to which the shovels *l* are firmly secured, and through which the shovels are held and adjusted upon the standards. In each block is a transverse socket, $K^{\times}$, to receive the eye part of a screw-eyebolt, *n*, and a hole transversely through the rear wall of the block, from the socket $K^{\times}$ to the rear side, to receive the bolt part of the eyebolt, and a round bore or

hole, *m*, longitudinally or vertically through the block to receive the shovel-standard H, which is rounded at its lower portion to fit in the bore *m*. The eye of the eyebolt is of the same or about the same diameter as the bore *m*, and will be coincident therewith. When the standards are inserted in the holes *m*, and the blocks K forced thereon, the round portions of the standards will pass through the eye of the eyebolt *n*, the screw-threaded portion of the eyebolt through the rear wall of the block, and receive screw-nut *o*, by means of which the shovels through the blocks K will be firmly held upon the standards, as the screw-eyebolt with the block acts as a clamp upon the standard to hold the shovel to any desired position upon the standard. The shovels can also be raised or lowered or turned on the standards to any angle with regard to direction of throwing the earth to or from the plants being cultivated by simply loosening nut *o*, and adjusting the shovels, and then screwing the nut *o* hard against the block K. L are guide-pieces, the upper outward projecting portions of which are fitted to receive the pendent ends of a suitably-bent connecting sway-bar, and the lower horizontal portions are slotted lengthwise, and are secured to the under side of the drag-bars by suitable bolts, and, by means of their slotted portions, are adjustable thereon laterally. M are friction-rollers with grooved peripheries, secured to the rear side of the axle, and revolve on suitable journals. N is a suitable bent sway-bar, the section of which is a rectangular parallelogram, and is received in grooved peripheries of rollers M, on which it is supported, and its pendent ends enter the upper and outward projecting portion of guides L, which are fitted for their reception, and by means of the adjustable connection of the guide-pieces L with the drag-bars the distance between them may be increased or diminished, and held in such a manner that their lateral movements will be in unison, and the relative lateral distance of the drag-bars from each other shall be preserved, and will be free to vibrate vertically independently. The crown or horizontal portion of sway-bars N is provided with a right-angled piece, *p*, which overlaps the axle, and is bored and provided with a pin, *r*, which passes through it into the axle, for the purpose of holding the drag-bars in a fixed position relatively with the machine, as respects their lateral movements, when circumstances require it. P are handles, secured to the rear portions of the drag-bars, and are inclined to the side in such a manner that the driver can walk by the side of the plants, and by means of the handles controls the movements of the shovels. R are beams, the forward ends of which are secured loosely by screw bolts to the insides and forward ends of the drag-bars, and extend rearward a proper distance to receive the crosswise bar S, the outward-projecting ends of which rest on the drag-bars. *t* are plates, suitably curved, the forward ends of which are secured to beams R, forward of crosswise bar S, and their rear ends rise in such a manner as to receive the bar S between them and beams R, and are held together in a proper hinged manner by means of suitable bolts, which pass through beams R, bar S, and plates *t*. The ends of bar S are provided with a series of holes at proper intervals, for the purpose of changing the distance between the beams R, so as to be received loosely between the drag-bars. T is a rectangled frame, secured centrally to the under side of the cross-bar S. To the sides of the pendent ends thereof are secured shield-plates *u* transversely to crosswise bar S, in such a manner that the shield-plates shall be suspended between the front or inner shovels, for the purpose of protecting the plants from injury by the dirt thrown from the shovels, and by means of their connection with the drag-bars will have a positive lateral movement equal, or nearly equal, to the lateral movements of the shovels, and longitudinally will always preserve, or nearly preserve, their parallel position with the direction of the machine, and will be free to rise to pass obstructions.

I claim as my invention—

1. The combination of the hangers E, recessed disks F, disks *a*, and their necessary holes and studs, with the drag-bars I, to allow of a vertical motion to the drag-bars, as described.

2. The suspension-rods *d*, regulating-springs *g*, and drag-bars I, in combination with hangers E, to which they are attached, substantially as described.

3. The bent sway-bar N, having right-angled piece *p*, in combination with pin *r* and axle B, as and for the purpose described.

4. The shields *u*, beams S and R, in combination with the drag-bars I, as and for the purposes described.

5. The clamp-block K, having vertical and lateral sockets, with shovels *l* attached thereto, and eye screw-bolt *n*, in combination with the standards H, constructed and operating as described.

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Witnesses:

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