

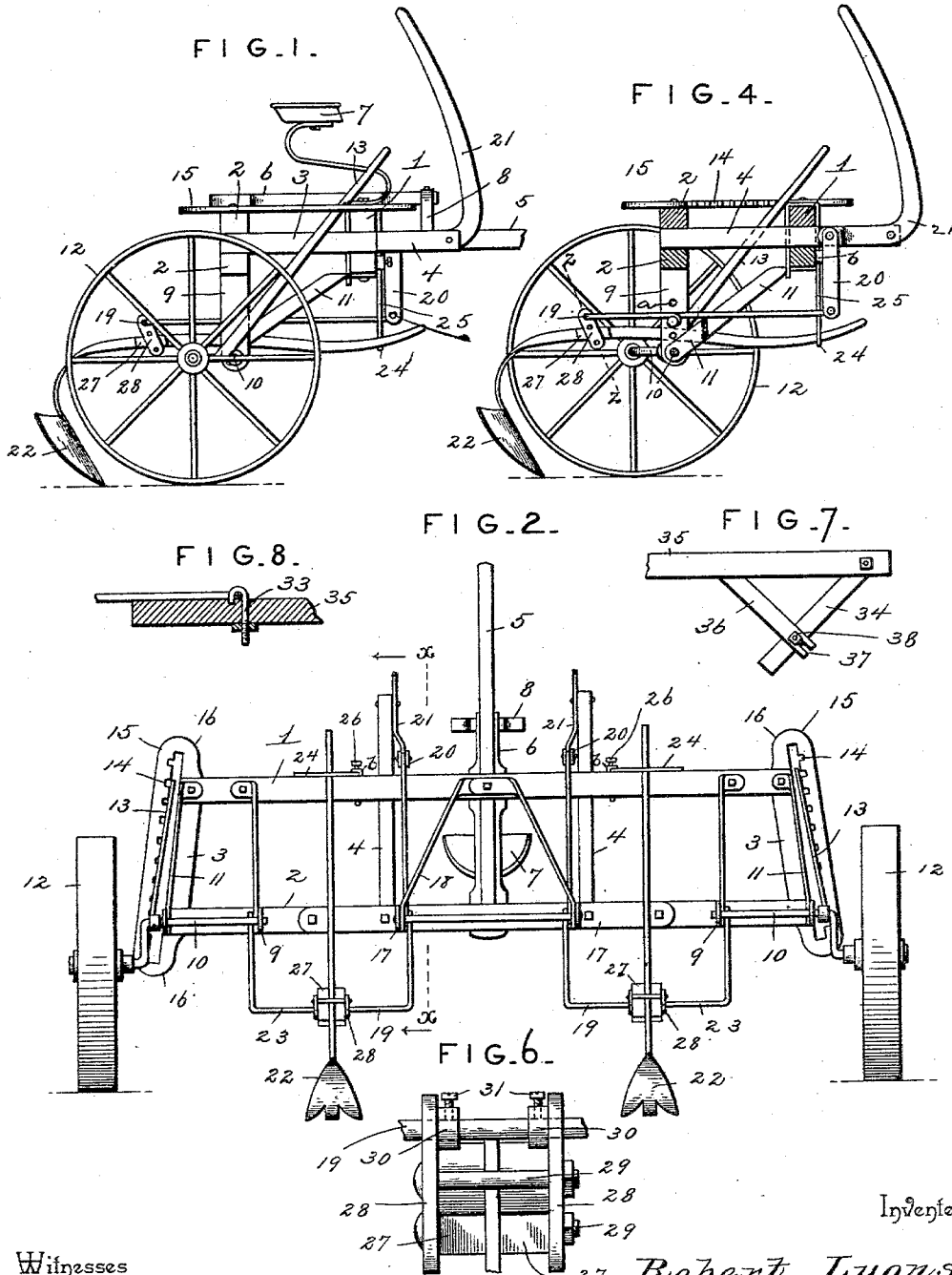
(No Model.)

2 Sheets—Sheet 1.

R. LYONS.  
LISTER CULTIVATOR.

No. 566,594.

Patented Aug. 25, 1896.



Inventor

Robert Lyons.

By His Attorneys,

C. A. Snow & Co.

Witnesses

Harry L. Amer.

U. B. Hillyard.

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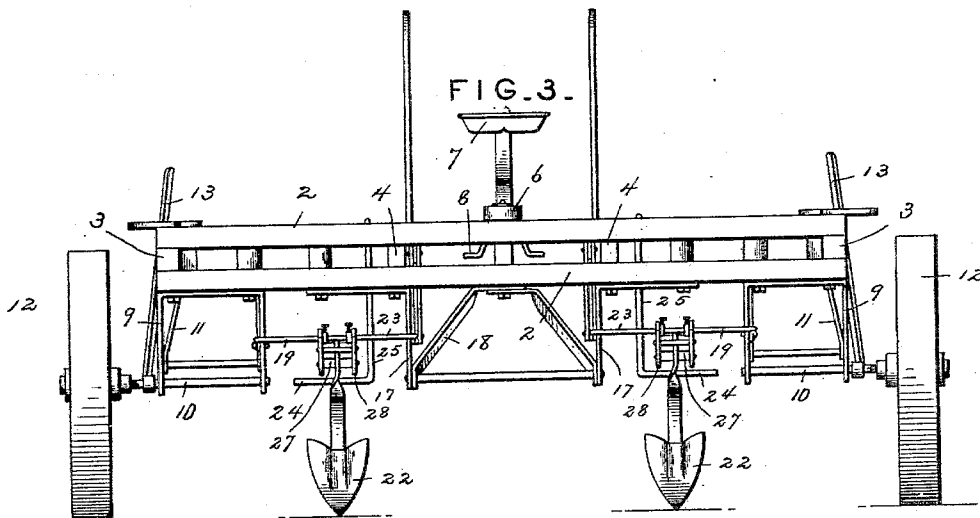
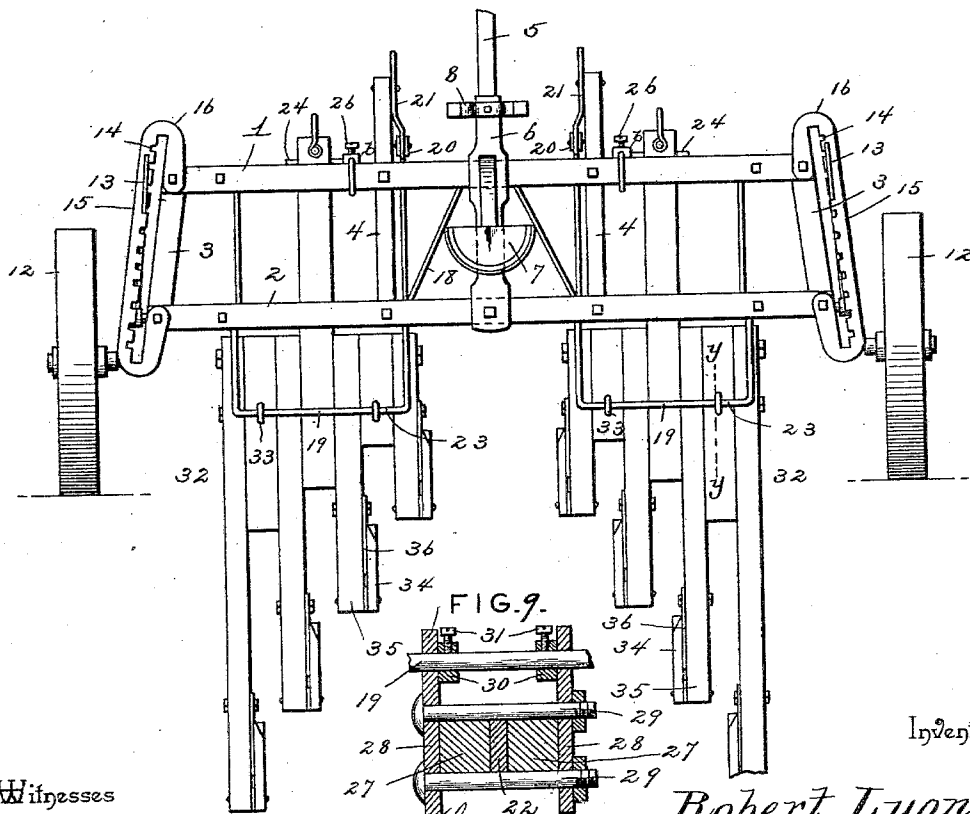


FIG. 5.



Witnesses

Harry L. Amer.  
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By his Attorneys,

Robert Lyons.

Cash & Co.

# UNITED STATES PATENT OFFICE.

ROBERT LYONS, OF LUCKY VALLEY, IOWA.

## LISTER-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 566,594, dated August 25, 1896.

Application filed September 20, 1895. Serial No. 563,136. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT LYONS, a citizen of the United States, residing at Lucky Valley, in the county of Woodbury and State of Iowa, have invented a new and useful Lister-Cultivator, of which the following is a specification.

This invention relates to cultivators constructed with especial reference to being used for listing purposes, and aims to provide a riding-frame which can be used with plows singly or in gangs and with shovels of various styles, and which will admit of the plows being adjusted laterally to the width of the rows or vertically to suit the depth of cultivation, the said frame being mounted so as to be leveled or adjusted to meet the requirements of the ground or the depth of furrow.

To attain the desired objects the invention consists in certain novel features of construction and combinations of parts substantially as herein illustrated, described, and specifically claimed.

In the accompanying drawings is illustrated an embodiment of the invention, although slight changes in the details, proportion, and arrangement of the parts may be resorted to without departing from the spirit of the invention.

Figure 1 is a side elevation of the cultivator; Fig. 2, a bottom plan view thereof; Fig. 3, a rear elevation, and Fig. 4, a transverse section on the line *x x* of Fig. 2, looking in the direction of the arrow. Fig. 5 is a top plan view, showing a gang of cultivators or plows substituted for the single plow shown in the other figures. Fig. 6 is a detail view of the connections employed for connecting the single plow to the bail. Fig. 7 is a detail view showing the slotted brace for connecting the lower portion of the cultivator-standard with the beam. Fig. 8 is a detail section on the line *y y* of Fig. 5. Fig. 9 is an enlarged section on the line *z z* of Fig. 4.

The same reference-numerals designate corresponding parts in all the figures of the drawings.

The frame comprises transverse beams 1 and 2, which extend in parallelism, and are formed of companion bars, side bars 3, and intermediate bars 4, extending parallel with the side bars 3, the said bars 3 and 4 having

firm connection with the transverse beams 1 and 2 and being arranged between the companion parts thereof. The pole or tongue 5 is disposed midway between the ends of the transverse beams and is secured between the companion parts thereof. A seat-bar 6 is located above the inner end of the pole and forms a support for the seat 7 and the foot-rest 8, the latter consisting of a plate or bar bent into substantially an inverted-V form and secured upon the front end of the seat-bar 6, the terminal ends extending outwardly to form supports for the feet. Inverted-U-shaped hangers 9 are secured to the ends of the transverse beam 2 and have the crank-axes 10 mounted therein, and these hangers are steadied and strengthened by braces 11, which are secured at their lower ends to the lower portions of the said hangers and incline upwardly and forwardly and have attachment at their front ends to the forward transverse beam 1. The ground-wheels 12 are loosely mounted upon the crank-arms of the said crank-axes 10, and their rim is sufficiently broad, being eight to twelve inches in width, more or less, so as to obtain an extended bearing upon the ground to crush and break up lumps or clods which may lodge in the bottom of the furrow or come within the path of the said wheels. The rims of the ground-wheels are slightly convexed on their tread surfaces, so as to insure the traveling of the wheels in the trough or bottom of the furrow. Levers 13 are secured at their lower ends to the crank-axes 10, and are adapted to be operated to change the relative position of the ground-wheels, so as to raise and lower the frame according to the nature of the ground or the depth of the furrow, and these levers are sufficiently elastic to spring laterally so as to be readily engaged with or disengaged from the series of notches or teeth 14 provided along the inner edges of plates 15, which latter have their end portions recurved, as shown at 16, and attached to the ends of the transverse beams 1 and 2. The upper ends of the levers 13 operate in the spaces formed between the side bars 3 and the plates 15, said spaces being sufficiently wide to admit of the disengagement of the levers from the teeth 14 by a lateral movement, as will be readily understood.

Hangers 17 are located intermediate of the hangers 9 and are secured to the transverse beam 2 and are braced by forwardly-extending stays 18, which are secured at their upper front ends to the transverse beam 1. Bails 19 have pivotal connection with the hangers 17 and with the inner members of the hangers 9, and their inner members are extended forwardly and are connected by links 20 with the short or horizontal arms of bell-crank levers 21, so that on operating the said levers the bails will be turned upon their pivotal connections and admit of the rear ends of the said bails being raised and lowered accordingly as it is required to adjust the plows or cultivating appliances attached thereto. The bail supports or hangers are provided with a vertical series of openings *a* to admit of the vertical adjustment of the bail-pivots, thereby making provision for the adjustment bodily of the said bails for any required purpose.

The plow 22, one being provided for each bail, is secured upon the rear horizontal portion 23 of the bail, and its front end engages with a horizontal bar 24, having adjustable connection with the transverse beam 1. The vertical part 25 of the bar 24 is connected with the transverse beam 1 in such a manner as to admit of the vertical adjustment thereof according as it is required to raise or lower the front end of the plow to vary the pitch thereof. The upper portion of the vertical part 25 is bent back upon itself so as to embrace the transverse beam 1 between its parallel parts, thereby preventing the turning of the vertical part 25 in its keeper. Any suitable means may be provided to attain the vertical adjustment of the horizontal bar 24, and, as shown, a binding-screw 26 extends through the keeper *b*, in which is placed the vertical part 25. The plow 22, which may be of any common form, has its beam clamped between blocks 27, which in turn are secured between plates 28 by means of bolts 29, one being located above and the other below the said blocks. These plates 28 are loosely mounted upon the rear portions 23 of the bails, and are secured in the located position by means of collars 30 and binding-screws 31, the latter passing through threaded openings in the sides of the collars and engaging at their inner ends with the rear portions 23 of the bails. To economize space and admit of the greatest range of lateral adjustment of the plow, the said collars 30 are located upon the parts 23 between the plates 28.

The bails may be made of any required width, so as to accommodate one or more plows, and the width of the machine can be made of any size, according to the extent of the work to be performed and the capacity and range of the implement. The plows are adjusted laterally to the required distance apart, and their pitch is controlled by the vertical adjustment of the horizontal bars 24, and the depth of furrow is regulated by a proper manipulation of the levers 21. For

leveling the machine to suit the nature of the ground and the depth of the furrow the levers 13 are operated so as to vary the relative position of the ground-wheels 12 to attain the desired end.

When required, the single plow can be replaced by a gang of plows or cultivators, in which event said gangs 32 will be attached to the rear portions 23 of the bails in any convenient manner, preferably by means of hooked bolts 33, which are arranged to have their hooked ends engage with the rear portions of the bails, whereby on loosening the nuts of the bolts the latter can be moved sufficiently to admit of their hooked ends being readily engaged with or disconnected from the bails, as will be readily understood. The cultivator-standards 34 will have pivotal connection with their respective beams 35, and braces 36 will have pivotal connection at their upper ends with the respective beams and their lower ends will be slotted, said slots 37 receiving the fastening-bolts 38, by means of which attachment is had between the braces and the standards. These slots 37 extend through the lower ends of the braces, and the braces are clamped against the sides of the standards 34 with sufficient tension to hold the cultivator-shovels to their work under ordinary conditions, but should the said shovels meet with a boulder, root, or other unyielding obstruction, the standards will move backward, allowing the fastening-bolts to pass through the open ends of the slots 37, so as to prevent the breaking or straining of the parts. The gangs of cultivators or plows can be adjusted in a similar manner to the various adjustments of the single plows, as will be readily understood.

One of the main features of the invention is the great width of the frame, which admits of one wheel following the furrow while the other is traveling upon the unbroken ground. By this means it is only necessary to plow the first furrow straight, as the succeeding furrows will be determined thereby, as is obvious. Moreover, side-hill plowing is rendered comparatively easy because the plow is prevented from slipping by reason of the wheel traveling in the furrow.

Having thus described the invention, what is claimed as new is—

1. In a cultivator, the combination with the frame and a pivotally-supported bail having one member extended beyond the pivotal support of the bail and connected with an operating-lever, of a plow mounted upon the closed end of the bail, and a horizontally-disposed bar capable of vertical adjustment and adapted to engage with the front end of the plow to steady and hold the latter to its work, substantially as set forth.

2. In a cultivator, the combination with the frame having hangers, and a bail having pivotal and adjustable connection with the hangers and having a portion extending forwardly of its pivotal support and connected

with an operating-lever, of a plow mounted upon the closed end of the bail, and a horizontal bar adapted to engage with the front end of the plow and capable of vertical adjustment to regulate the pitch of the plow, substantially in the manner set forth for the purpose described.

3. In a cultivator, the combination of a pivotally-supported bail, means for turning the same upon its pivotal supports, plates mounted upon the horizontal or closed portion of the bail, a plow, blocks located upon opposite sides of the plow and arranged between the lower portion of the plates, and bolts placed above and below the blocks and securing the plates together and clamping the blocks against the sides of the plow-beam, substantially as set forth.

4. In combination, a pivotally-supported

bail, means for adjusting the same about its pivotal support, plates mounted upon the horizontal portion of the bail, a plow, blocks placed upon opposite sides of the plow and arranged between the plates, bolts for connecting the plates together and clamping the said blocks against the sides of the plow-beam and collars mounted upon the bail between the said plates and provided with binding-screws to secure the plow in the located position, substantially as set forth for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROBERT LYONS.

Witnesses:

H. D. WILLIAMS,

A. L. HOPKINS.