

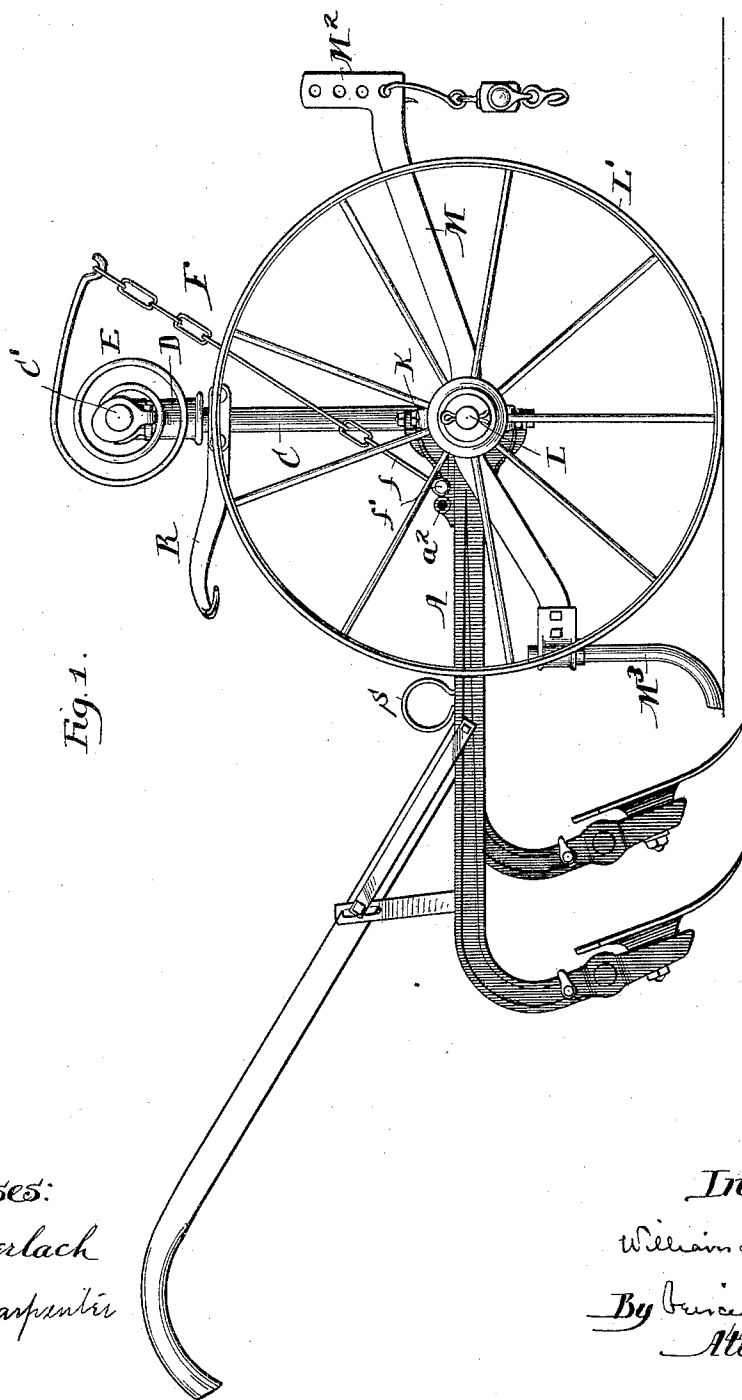
(No Model.)

3 Sheets—Sheet 1.

W. SOBEY.
CULTIVATOR.

No. 474,309.

Patented May 3, 1892.



Witnesses:
Fred Gerlach
J. B. Carpenter

Inventor:
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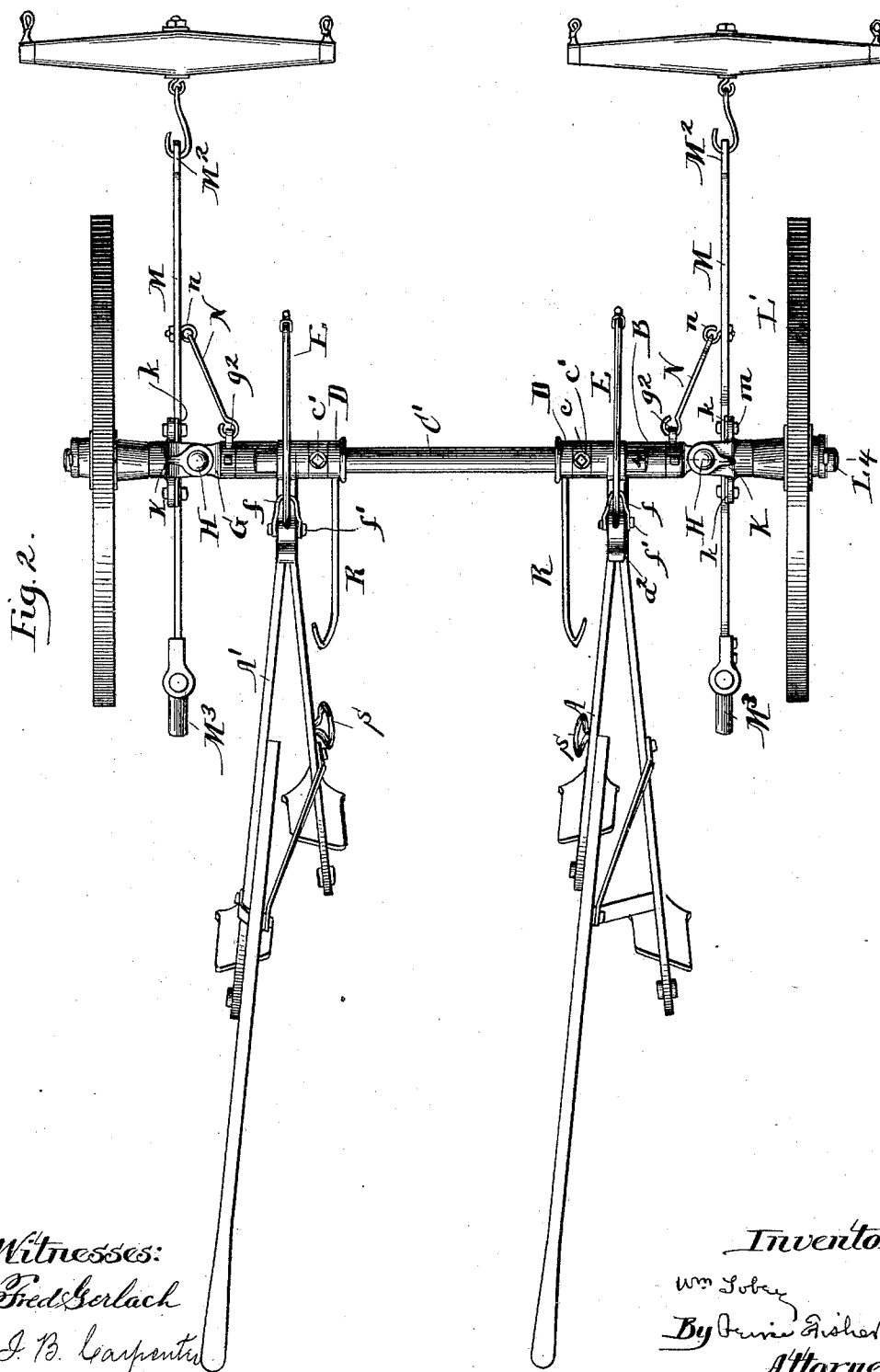
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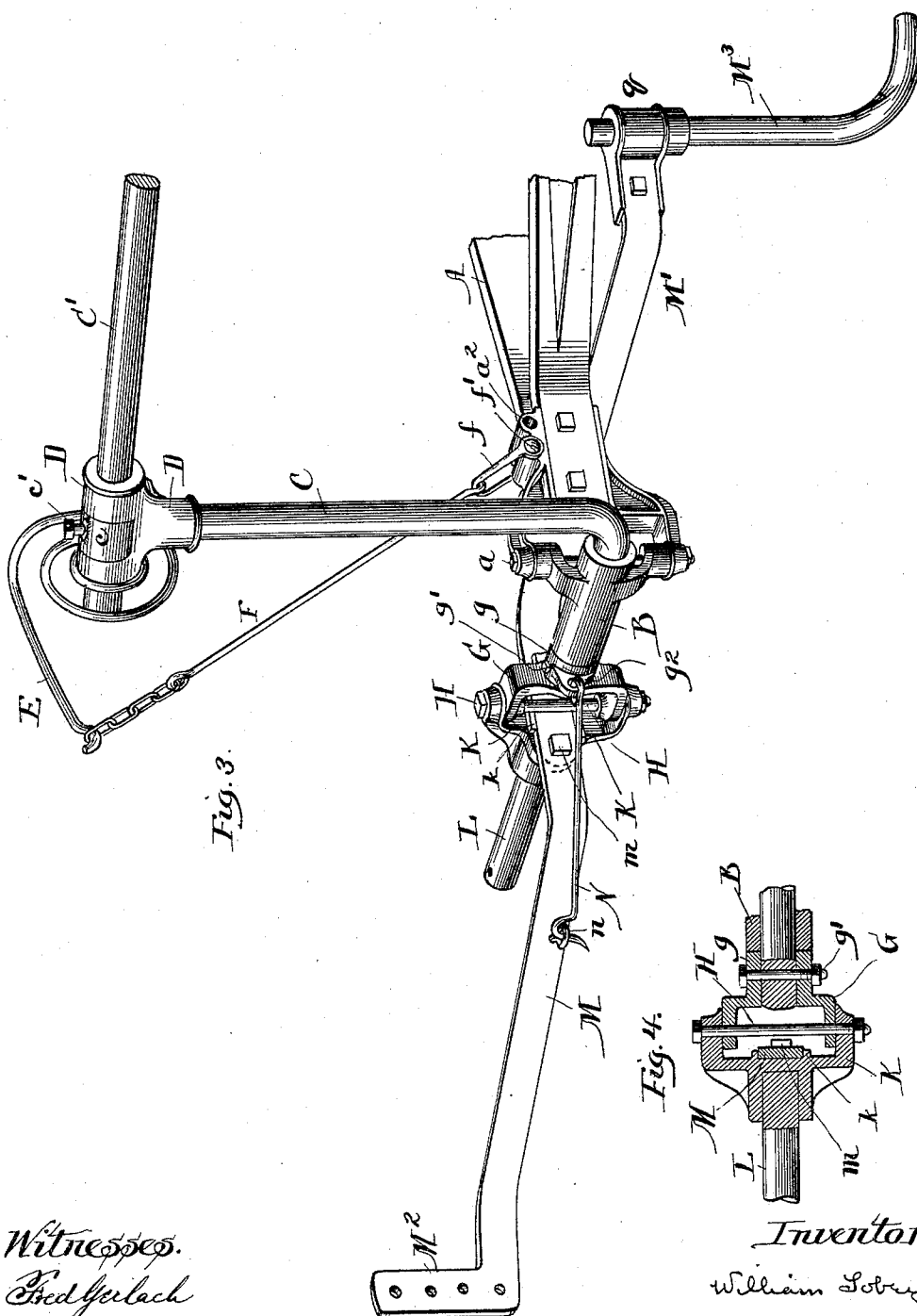
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UNITED STATES PATENT OFFICE.

WILLIAM SOBEY, OF RACINE, WISCONSIN, ASSIGNOR TO THE J. I. CASE PLOW WORKS, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 474,309, dated May 3, 1892.

Application filed January 25, 1892. Serial No. 419,173. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SOBEY, residing at Racine, in the county of Racine, State of Wisconsin, have invented certain new and useful Improvements in Cultivators, of which I do declare the following to be a full, clear, and exact description, sufficient to enable others skilled in the art to which such invention appertains to make and use the same.

10 The invention relates to tongueless cultivators of that class wherein a simple arch or cross-bar at the top carries near its opposite ends the pivotally-suspended radius arms or hangers. These hangers swing vertically beneath the cross-bar, and are furnished below with an outward horizontal extension, which affords a mount for the pipe or like coupling of the plow-beam and a spindle-bearing for the supporting-wheel. The separate hangers

20 allow for the independent longitudinal play of each plow-beam and its wheel; but in practice the extent or direction of such play for the two beams is not often uniform. Changes in draft, resistance, or from casual obstructions at the sides of the machine affect the wheels and beams unevenly, and because of this the hangers tend constantly to topple forward or back at their free joints with the common cross-bar.

30 The device is rickety and unstable and will not stand up to its work. To remedy this defect is the main object of the invention, and to such end it designs to provide a yielding spring connector located between each beam and its hanger and crossing (from front to back) the axial line of the wheel-spindles, said connector serving not merely as a counterpoise for the beam in raising and lowering the same, but acting as well to keep the hanger-joint at the cross-bar steady and co-operating

40 also through the free cross-bar with the companion connector and its adjunctive parts to maintain the hangers upright at their pivot-joints with the bar. The effect is substantially the same as if the cross-bar, instead of being free, were stoutly held at its center by a team-pole, the proposed structure, however, permitting the free arch-bar to act somewhat as an evener in distributing the strains to the

50 two sides of the machine.

The exact nature of the improvement and the several details thereof will appear from the description following, and be pointed out by claims at the conclusion thereof.

In the accompanying drawings, forming part 55 of this specification, like parts are denoted by like designation throughout.

Figure 1 is a view in side elevation of a cultivator embodying the invention. Fig. 2 is a plan view thereof. Fig. 3 is an enlarged perspective view showing portions of the arch-bar, the plow-beam, the swinging hanger, and connected parts. Fig. 4 is a detail sectional view taken at line 4 4 of Fig. 2.

Extending from side to side at the top of 65 the machine is the free arch or cross-bar C', near the opposite ends of which the hangers or radius-arms C stand pivotally suspended. Each hanger C is connected with the cross-bar C' by means of a knuckle or like joint, as 70 at D, which is forked to receive a collar c, having set-screws c', whereby the hanger C can be laterally adjusted and held in place, while yet free to turn about its joint with the cross-bar. Near its lower end each hanger C 75 is provided with an outward horizontal extension, affording a mount for the pipe-coupling B or like expedient to sustain the plow-beam. The beam A is connected with its coupling B through the usual pivot-bolt a, 80 which engages the corresponding lugs or ears projecting, respectively, from the front of the beam and from the back of the coupling.

Between each beam and the pivot-joint D 85 of its supporting-hanger C extends the yielding spring-connector, which in the form shown consists of the helical spiral E, secured at one end to the joint D in such wise that its free end extends forward in front of the axial line of the wheel-spindles. A link F joins the free 90 end of the helical spring E with the swinging bail f, pivoted, as by bolt f', to the beam A. There may be more than one seat, as at a², for the bolt f' of the bail, so that the position of the bail, and in consequence the point of 95 power-application for the spring E, can be varied with reference to the beam-fulcrum, (at the coupling B,) and the leverage upon the plow-beam be thus correspondingly changed. The chain-section at the upper terminal of 100

the link F allows for the variable adjustment of the tension of the spring E with reference to the load and resistance of the beam.

The sustaining-wheel for the machine may be mounted directly upon the horizontal extension of the hanger C, adjacent to the pipe-coupling B, although in preferred practice the wheel is set upon a stub axle or spindle having a slight lateral play, which spindle constitutes practically a part of the horizontal extension of the hanger C. The extension is simply divided in two, the parts being joined together by a pivot-bolt, which permits a slight swing to the outer portion carrying the wheel-spindle. A bracket G, having a hub *g*, is rigidly secured, as by bolt *g'*, to the fixed part of the hanger extension, and engages with a corresponding bracket K, having the stub-spindle L secured thereto. Corresponding ears of the brackets G K are pivotally held by means of the through-bolt H, so that the spindle end of the hanger-extension is free to move slightly about the pivot H. The supporting-wheels L' are set upon the stub-axes L, and ultimately receive the full weight of the front of the machine.

Between the ways or ledges *k* of the bracket K and against the front and rear ears thereof rests the clevis-bar M, extending forwardly, and the leg or standard M', extending rearwardly on the machine, as shown. For convenience the clevis-bar M and the leg M' are in continuous piece fastened by bolts, as at *m*, to the inner face of the bracket K. At its front the clevis-bar M is furnished with the usual series of hitch-points upon its terminal M², whereby the line of draft can be changed, as well understood. A hook N, secured, as at *g*², to the bracket G, engages with the eye *n* on the clevis-bar M, and thus acts to hold the stub-axle L rigidly in right alignment when the machine is proceeding to the field or at other times, as may be desired. In plowing, the hook N is released from its eye *n*, so that the stud-spindle can swing for a slight distance with its wheel L' about the pivot-bolt N. By such expedient, when the horse swerves from the path the wheel L' responds at once while the plow-beam and its shovels continue in true course without side draft or irregularity of movement, such as would occur if the spindle L were in rigid alignment with the fixed part of the hanger-extension.

The leg or standard M' is furnished with the trailing foot M³, held, as at the seat *q*, in position free to swivel upon the leg. Each standard M' M³ sustains the weight of the machine at the rear of the wheel-spindle, and both standards in conjunction with the wheel-rims constitute the ultimate points of support for the entire device. Should the shovels be in working position they help to sustain the weight of the beams and by so far relieve the standards from the extra duty which necessarily comes upon them when the beams are lifted or are at rest by their eye-

loops S in the hooks R. At such time the rear of the machine greatly overbalances the front, and so tends to gravitate about the wheel-hubs as a center; but the standards M' M³ are in play, and being rigidly fastened to the hanger-extensions rest firmly upon the ground and resist the gravitating turn, so that the parts are maintained in unchanging position. When organized as shown by Fig. 1, the yielding spring-connector which (as there displayed) extends from front to back across the axial line of the machine and joins the plow-beam A with the pivot-coupling D of the hanger at the cross-bar serves, first, as a counterpoise for the beam A about its fulcrum B, and, second, as an efficient means for holding the hanger upright. The connector keeps the hanger and beam together as one system. Any tendency which the hanger C may have to topple forward at its joint with the cross-bar from the wheel-axle as a center is resisted through the link F in its relation to the free end of the helical spring E and by the weight of the plow-beam A. On the other hand, any backward topple cannot occur, because, as already explained, the standards M' M³ are fastened to the hanger extensions and resist the reverse turn of the spindles within the wheel-hubs. At all times, therefore, the weight of the machine behind the wheel-spindles is constantly in play to hold the cross-bar C' substantially upright, and this, too, irrespective of the independent longitudinal swing of the hanger C, beam, and wheel about the pivot-joint D of the hanger. During operations in the field the draft upon the clevis-bar M generally raises the foot M³ far enough for it to just clear the ground, although the weight and resistance of the beam A and its shovels still serve to hold the machine to its work. It is plain that the movement of either hanger C about its pivot-joint D is transferred in measure through the free cross-bar C' to the companion hanger and its adjunctive parts, so that such cross-bar acts somewhat as an equalizer in distributing the strains evenly to both sides of the machine.

Obviously the details of structure may be varied without departing essentially from the real invention, which latter is not limited to the precise devices herein set forth, although restricted, of course, to that class of tongueless cultivators wherein the free arch or cross-bar pivotally carries the swinging radius arms or hangers, these latter serving as mounts for the plow-beams and supporting devices, (wheels.) Other kinds of spring-connector than the helical form with its link can be used, or instead of crossing the axial line, as shown, the connector may be joined to the hanger and plow-beam, respectively, but be located wholly at the rear of the axle. Again, the counterpoise-spring for the plow-beam in its action about the pipe-coupling may be quite distinct in structure from the anti-toppling spring-connector, which latter, for instance, may extend from the arch bar to the stand-

ard M' or like rigid projection, instead of being arranged between the hanger and swivel plow-beam; but the latter arrangement, as appears from the description, allows a single spring-connector to perform a double duty or function, and being simpler is therefore preferred.

Because of the modifications proposed it will be understood that the designation of the "plow-beam" in the claims following, as an element of structure combined with the spring-connector to prevent toppling of the hanger-joint, may be for precision only, (unless the context shows the contrary,) and is not necessarily in way of limitation, especially since the rear standard or like rigid projection can be employed, instead as a hitch for the yielding connector.

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

1. In tongueless cultivators, the combination, with the free arch or cross-bar and with the swinging hanger sustained therefrom, of the pivoted plow-beam, the machine-wheel and the rear standard carried, respectively, by said hanger, and the yielding spring-connector extended between the arch bar or hanger and the plow-beam (or its equivalent) to prevent toppling, substantially as described.

2. In tongueless cultivators, the combination, with the companion hangers, having a wheel-spindle projecting from each, of the swivel-mounted plow-beams and the rear standards extending from said hangers, respectively, the cross-bar or arch pivotally sustained by the opposite hangers, and the spring-

connectors located across the spindle-axis and uniting each hanger with its corresponding plow-beam, whereby the latter is counterpoised, and the common cross-bar held in normal position, substantially as described.

3. In tongueless cultivators, the combination, with the free arch or cross-bar and with the swinging hanger suspended pivotally therefrom and having a horizontal extension, of the swivel-mounted plow-beam, the machine-wheel, and the rear standard sustained, respectively, from said extension, the helical spring carried by said hanger, and the intermediate link joining the free end of said spring with the plow-beam, whereby said beam is counterpoised and the hanger prevented from toppling, substantially as described.

4. The combination, with the free arch or cross-bar, of the swinging hanger supported therefrom, the plow-beam pivoted upon said hanger, and the machine-wheel journaled thereon, the intermediate spring-connector joining said beam and hanger, and the clevis-bar and supporting-standard extending, respectively, front and back from said hanger, substantially as described.

5. In tongueless cultivators, the combination, with the free arch bar, of the swinging hanger supported thereby, the plow-beam swiveling from said hanger, the intermediate spring-connector joining said beam and hanger, and the machine-wheel journaled and laterally pivoting upon said hanger, substantially as described.

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