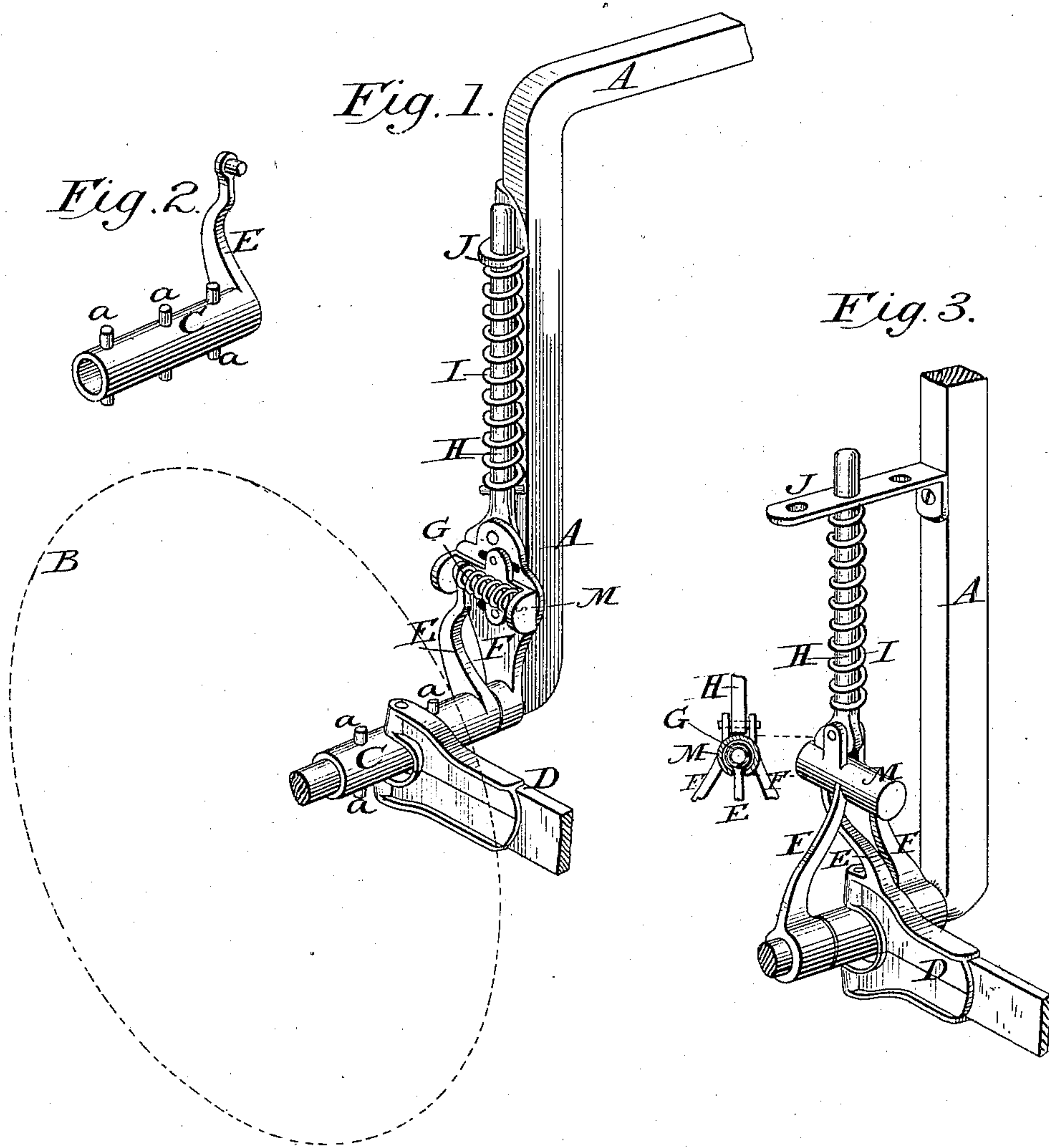


(No Model.)

E. P. LYNCH.
CULTIVATOR.

No. 257,229.

Patented May 2, 1882.



Attest.

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UNITED STATES PATENT OFFICE.

EDWARD P. LYNCH, OF DAVENPORT, IOWA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 257,229, dated May 2, 1882.

Application filed February 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. LYNCH, of Davenport, in the county of Scott and State of Iowa, have invented certain Improvements in Cultivators and similar Machines, of which the following is a specification.

This invention relates to wheeled cultivators and similar implements in which springs are employed to elevate the shovel-carrying beams or drag-bars out of action, and more particularly to that class of machines in which a spiral spring forces downward a rod pivoted to a crank-arm on the end of the beam or coupling.

The primary objects of the invention are to suspend the shovels with a spring action at the exact depth desired in practice, and to relieve the axle and coupling-box from the friction upon the axle incident to the downward pressure of the spring under the ordinary arrangement.

With these ends in view the invention consists in introducing between the arm of the beam and the spring-actuated rod an intermediate arm sustained upon the axle, and in connecting the two arms by a spring, as well as in various minor details.

Referring to the accompanying drawings, Figure 1 is a perspective view, showing my device applied to one side of an ordinary wheeled walking-cultivator. Fig. 2 is a view of the pipe-box or coupling-sleeve detached. Fig. 3 is a perspective view of a modification.

Referring to the drawings, A represents the usual arched axle, and B one of the sustaining-wheels applied to the horizontal end of the axle.

C represents the pipe-box or sleeve mounted loosely on the end of the axle, and provided with the series of studs *a* to receive the coupling or clevis by which the plow-beam D is connected thereto. The studs permit the beam to swing laterally independently of the other parts, but compel the pipe-box to turn with the beam as the latter rises.

The above parts are of ordinary construction, and form no part of my invention.

On the inner end of the pipe-box I form or secure rigidly an upright arm, E, and by its side I mount loosely on the axle an upright swinging arm, F, the upper end of which is widened fore and aft, and recessed to permit

the arm E to swing backward and forward therein as the beam rises and falls. Within the arm F, I mount a spiral spring, G, bearing against the rear side of the arm E. To the upper end of the arm F, I connect by a knuckle-joint an upright rod, H, the upper end of which slides freely through a guide, J, secured to the upright portion of the axle or other rigid part of the machine. The joint connecting the rod and arm permits them to yield and bend freely forward as the beam rises and turns the pipe-box; but as the beam descends the joint locks the rod and arm F rigidly together as soon as they stand in line, thus causing them to remain at rest, although the arm E may be carried backward against the pressure of the spring by the continued downward motion of the beam. Around the sliding rod H, I mount a spiral spring, I, bearing at the top beneath the guide J, and at the lower end against a collar or pin on the rod, so that it tends to force the rod and arm downward. As the beam is raised above an operative position the arm E, turning forward and bearing within the front side of arm F, turns the latter forward also, and the instant that this commences the rod, urged downward by the spring J, depresses the arms with sufficient force to cause the elevation of the beam with little or no assistance on the part of the attendant. As the beam is again lowered the two arms E F swing upward and backward together until they assume an upright position, whereupon the joint prevents further motion of the arm F and the lifting action of spring J ceases. At this instant the beam and shovels are down nearly to their operative positions, and as they continue to descend the arm E is carried backward and caused to compress the spring G until at the instant the shovel reaches the proper depth the resistance of the spring is sufficient to suspend the beam and shovel. Thus suspended, the shovels may be raised, lowered, and moved laterally in the ground by slight exertion on the part of the operator, the action being a smooth and easy one, far superior in the results produced to that of the ordinary machine.

In order that the tension of the suspension-spring and the depth of the shovels may be varied, the suspension-spring or the arm acting thereon will be made adjustable. It is pre-

ferred, as shown in the drawings, to mount the spring in a socket, M, connected to the arm F by slots and bolts.

Instead of constructing the two arms in the form above described, the construction represented in Fig. 3 may be employed. The arm F, arched or forked at the lower end to straddle the end of the beam, is pivoted to the lower end of the spring-actuated rod H. The arm E, attached to the plow-beam, extends upward and bears against the forward end of the spiral spring seated in the socket M, secured to arm F, as shown. The action is identical with that of the first-described devices, except that the lower end of arm E turns with the beam as it swings laterally; but this is not necessary. While it is preferred to employ the spiral springs, springs of other forms arranged to actuate the arms in like manner may be used. It is also obvious that as regards the action of the arms E F and the intermediate spring it is immaterial in what form or manner the lifting-spring is applied, provided it actuates the arm F in substantially the same manner as the spring and arm herein represented.

It will of course be understood that in the machine shown and described the spring G must be of greater strength or stiffness than the spring I, as the first-named spring would otherwise be practically useless for the purpose for which it is designed.

Having thus described my invention, what I claim is—

1. The combination of the beam and the arm

connected therewith, the secondary arm having a limited play in relation to the first arm, the rod, pivoted to the second arm, and the two springs, applied substantially as described and shown.

2. The combination of the beam and the arm connected therewith, the second arm mounted loosely on the axle, and the lifting-spring and the suspending-spring, substantially as described and shown.

3. In combination with a beam and a rigid arm connected therewith, a second arm, actuated by a beam-lifting spring, and a suspension-spring between the two arms, substantially as shown.

4. The combination of the beam and its arm, the independent arm, the suspension-spring, and the spring-adjusting device.

5. The combination of the beam, the upright arm connected therewith, the independent arm, the intermediate spring, the rod united to the independent arm, the knuckle-joint, and the spring mounted upon the rod, as shown.

6. In combination with the vertically-swinging cultivator-beam, a spring tending to elevate the same, and a second and stronger spring located intermediate between the arm and the first spring, in the manner and for the purpose substantially as described and shown.

EDWARD P. LYNCH.

Witnesses:

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