

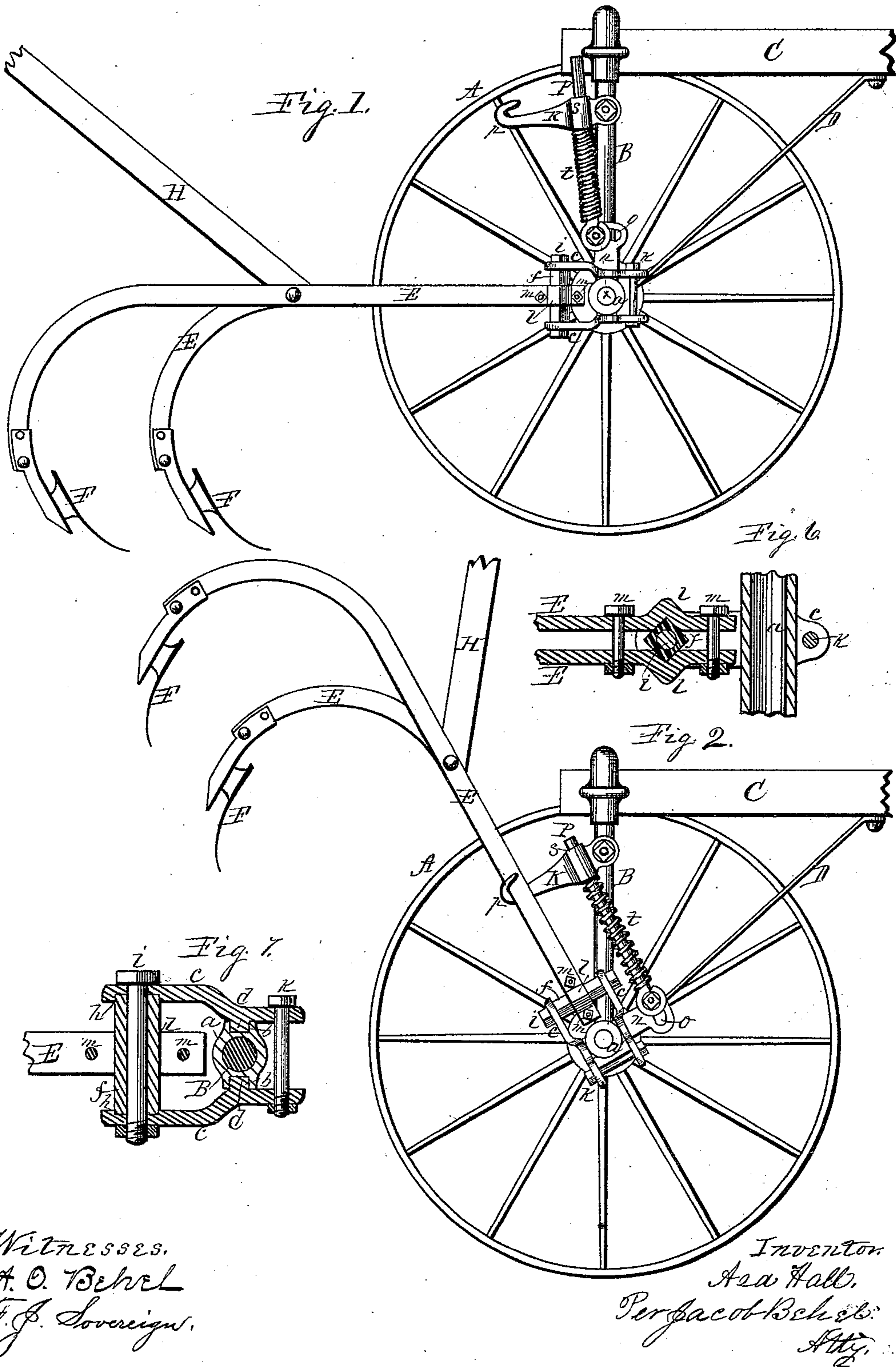
(No Model.)

2 Sheets—Sheet 1.

A. HALL.
CULTIVATOR.

No. 282,885.

Patented Aug. 7, 1883.



Witnesses,
A. O. Behr
F. J. Sovereign.

Inventor
A. Hall,
Per Jacob Behr
Att.

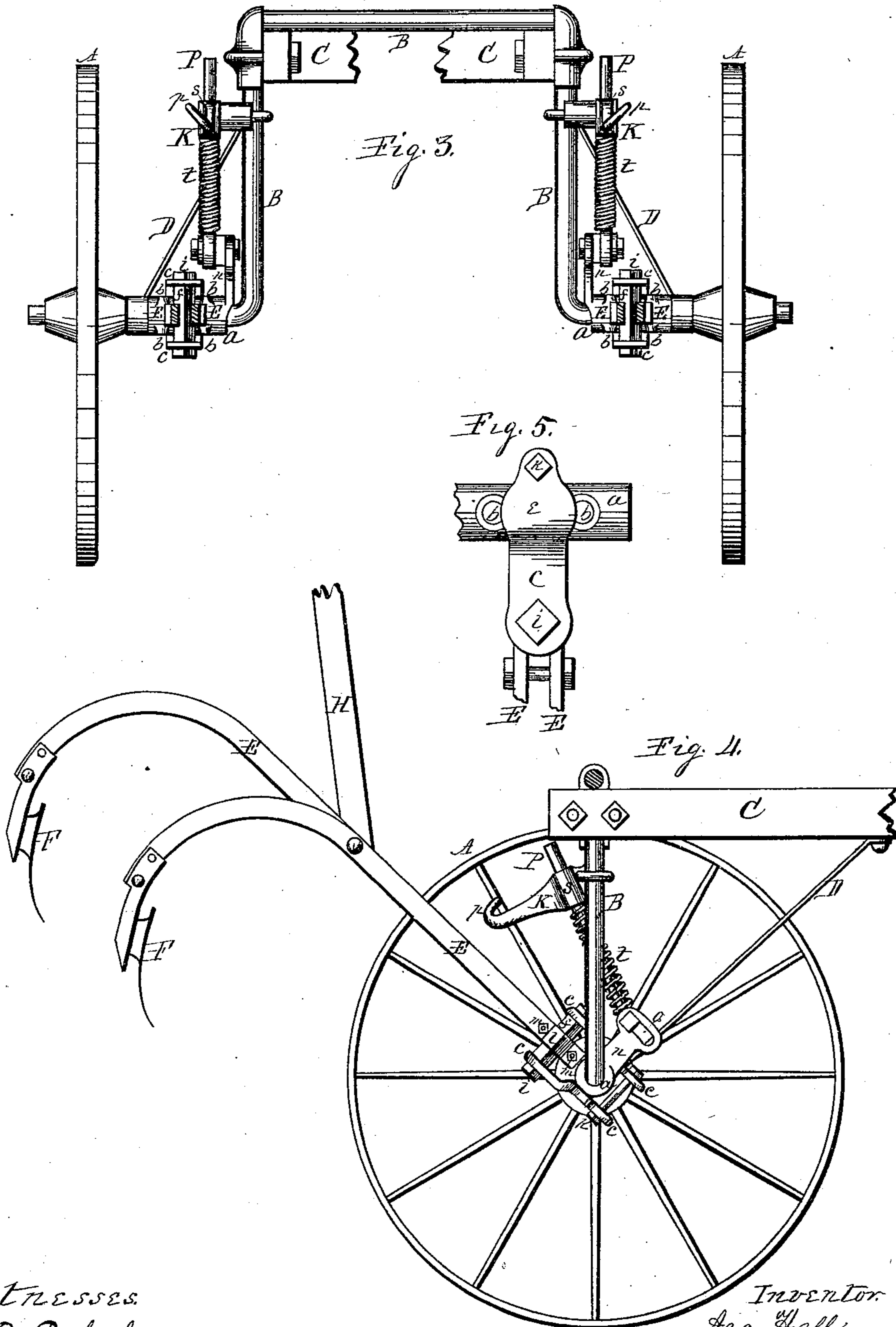
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UNITED STATES PATENT OFFICE.

ASA HALL, OF ROCKFORD, ILLINOIS, ASSIGNOR TO NORMAN C. THOMPSON,
OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 282,885, dated August 7, 1883.

Application filed April 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, ASA HALL, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Cultivators, of which the following is a specification.

This invention relates to that class of cultivators known as "straddle-row walking-cultivators."

The object of this invention is to improve this class of cultivators, to enable the operator to handle the machine with greater ease and certainty and to produce better results.

This invention consists in mechanism capable of adjustment to cause the cultivator-teeth to engage the ground with greater or less force; in mechanism to assist in raising the shovel-beams; in mechanism to hold the shovel-beams suitably elevated to permit the machine to be turned and placed in position for the purpose of cultivation, and from which position they may be lowered to a proper working position by a downward pull on the handles, and in mechanism to suspend the shovel-beams for the purpose of transportation; also in improved mechanism to connect the shovel-beams with the supporting-frame. These features, and others including the necessary devices and their several combinations, all of which will be hereinafter described, constitute the subject-matter of this specification.

In the accompanying drawings, Figure 1 is a side elevation of a straddle-row cultivator embodying my invention, in which one of the carrying-wheels is omitted, and the parts are in working position. Fig. 2 is a side elevation in which one of the carrying-wheels is omitted, and the parts are in position for transportation. Fig. 3 is a rear elevation, in which the shovel-beams are cut rearward of their joint-connection. Fig. 4 is a lengthwise central vertical section with the parts in position for turning the machine and getting into position for cultivating. Fig. 5 is a plan view of the joint-connection of the shovel-beams with the axle-tree. Fig. 6 is a horizontal central section of the shovel-beams' connection with the axle-tree; and Fig. 7 is a lengthwise cen-

tral vertical section of the shovel-beam connection with the axle-tree.

In this machine the main supporting-frame, as represented in the figures, consisting of the carrying-wheels A, crank-formed axle-tree B, tongue-beams C, and braces D, suitably joined to each other, is substantially the same as like parts of machines now in use and to be found in the trade.

At *a* are represented sleeves supported on the lower horizontal portions of the axle-tree in such a manner as to be capable of a free oscillatory movement thereon. These sleeves are provided on opposite sides with cylindrical holes *b* to receive stud-journals.

At *c* are represented joint-plates having their forward end portions fitted with stud-journals *d*, to enter the cylindrical holes *b* in the upper and lower sides of the sleeves *a*. These joint-plates, at their stud-journal portions, are enlarged in width, as at *e*, to give an increased bearing-surface, to prevent axial or rolling motion of the shovel-beams connected with the joint-plates. The rear end portions of the joint-plates *c* are separated by means of a tubular bar, *f*, rectangular in its sectional outside dimensions. The ends of this bar *f* enter rectangular recesses *h*, formed in the inner faces of the joint-plates, in such a manner as to prevent axial motion of the bar. In this position the axial opening of the bar corresponds with holes formed in the center of the recesses in the joint-plates in such a manner as to receive a suitable screw-bolt, *i*, which is passed through the parts and serves to fix the parts in their relative positions firmly. The forward ends of these joint-plates are fitted to receive a screw-bolt, *k*, by means of which they are held in working position on the sleeve, and are made adjustable thereon toward or from the center of the machine in any of the cylindrical holes formed in the sleeve.

At *E* are represented shovel-beams, produced from suitable bar material, having their rear end portions curved and provided with shovels *F*, in the usual manner, and are supported rearward in their relative position by a lateral brace, and are also provided with handles *H*, all of which are substantially the same as

like parts to be found in machines now in use. The forward end portions of these shovel-beams are bent or kinked, as represented at *l*, to embrace the opposite angles of the tubular bar *f*, and, by means of screw-bolts *m*, passed through the beams forward and rearward of the tubular bar *f*, serve to fix the shovel-beams to the tubular bar in a manner capable of a vertical adjustment thereon, to vary the running or working depth of the shovels.

At *n* is represented an arm rising from the inner end of the tubular joint sleeve *a*, substantially at right angles to the sleeve, and the outer end portion of this arm is provided with a segmental slot, *o*.

At *K* is represented a hook-arm having a pivotal connection with the vertical arm of the crank-formed axle-tree, in such a manner as to be capable of a vertical adjustment thereon; and its extreme rear end is produced in hook form, as at *p*, to receive the shovel-beams, to hold them in an elevated position for the purpose of transportation. This hook-arm is also provided, near its pivotal connection with the axle-tree, with a tubular bearing, *s*, to receive the upper portion of the spring supporting bar *P* in such a manner as to permit it to slide endwise therein freely. The lower end of this spring supporting bar *P* is pivotally connected with the slotted upper end of the right-angled arm *n* in such a manner that its pivotal connection may be adjusted to any point on the arm within the limits of the slot. This spring supporting bar, between its pivotal connection with the slotted arm and its bearing in the hook-arm, is surrounded with a spiral spring, *t*, in such a manner that its spring action tends to separate its bearings.

The construction and arrangement of these parts are such that when the shovels are in their working position, and the pivotal connection of the spring-bar is in the rear end of the segment-slot *o* in the arm *n*, this pivotal connection will be rearward of a line connecting the center of the axle-arm and the center of the tubular bearing support *s*, as represented by the dotted line *x*, in which position the action of the spring will tend to force the shovels into the ground, or cause them to run at a greater depth. It will also be seen that if, by means of the handles, the shovel-beams are raised sufficient to carry the pivotal connection of the spring supporting bar with the segment slotted arm forward of the dotted line *x*, connecting the center of the axle-arm with the center of the tubular bearing *s*, the action of the spring will operate to lift the shovel-beams and hold them suspended in the position represented in Fig. 4, to permit the machine to be turned at the ends of rows, and to be placed in position for cultivation, and from which position the shovels can be lowered to their working position by a downward pull on the handles.

It will further be seen that by means of the segment-slot *o* in the outer portion of the right-

angled arm, the pivotal connection of the spring supporting bar therewith may be varied to any extent within the limits of the device, to increase or lessen the lifting action of the spring.

It will also be seen that by reason of the free connection of the upper end of the spring supporting bar with the hook-arm rearward of its pivotal connection with the vertical arm of the axle-tree, the raising of the shovel-beams will cause the free bearing of the spring supporting bar in the pivoted hook-arm to move with the forward downward movement of the spring supporting bar, and will operate to lessen the endwise movement of the spring supporting bar relatively with its free support, which will operate to maintain more nearly the relative distance between the pivotal connection of the spring supporting bar with the slotted arm of the joint-sleeve, and its free bearing support in the pivoted hook-arm, and consequently will require a less endwise spring movement in the operation of raising and lowering the shovel-beams. By this construction and arrangement of the parts, I am enabled to produce a spring support less liable to weaken in use, and consequently more durable.

I claim as my invention—

1. The combination of a sleeve having its opposite sides provided with cylindrical bearings, joint-plates provided with the stud-journals to enter the cylindrical bearing in the sleeve, a tubular bar placed between the rear end portions of the joint-plates, and an axial bolt to fix the joint-plates to the tubular bar, substantially as and for the purpose set forth.

2. The combination, with the bar connecting the rear ends of the joint-plates, of shovel-beams having their forward end portions bent or kinked to engage the bar connecting the joint-plates, substantially as and for the purpose set forth.

3. The combination, with the tubular bar connecting the rear ends of the joint-plates, said bar having a rectangular outline in section, of shovel-beams having their forward end portions bent or kinked to engage the opposite angles of the connecting-bar, said shovel-beams held in position and made vertically adjustable on the connecting-bar by means of clamping-bolts, substantially as and for the purpose set forth.

4. The combination, with an arm having a pivotal connection with the vertical arm of the axle-tree, and with the angle-arm arising from the inner end of the joint-sleeve, of a spring supporting bar having a pivotal connection with the angle-arm, and a free connection with the pivoted arm, to permit of an endwise sliding movement of the bar in its connection with the pivoted arm, substantially in the manner set forth.

5. The combination, with the spring supporting bar having a pivotal connection with the uprising angle-arm, and a free connection with

the pivoted arm, of a spring surrounding the supporting-bar between its connections with the uprising angle-arm and the pivoted arm, substantially as and for the purpose set forth.

5 6. The combination, with the spring supporting bar, and with the spring wound thereon, of a pivoted arm having a free connection with the spring supporting bar, and a pivotal

connection with the vertical arm of the axle-tree, and made vertically adjustable thereon, so substantially as and for the purpose set forth.

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Witnesses:

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