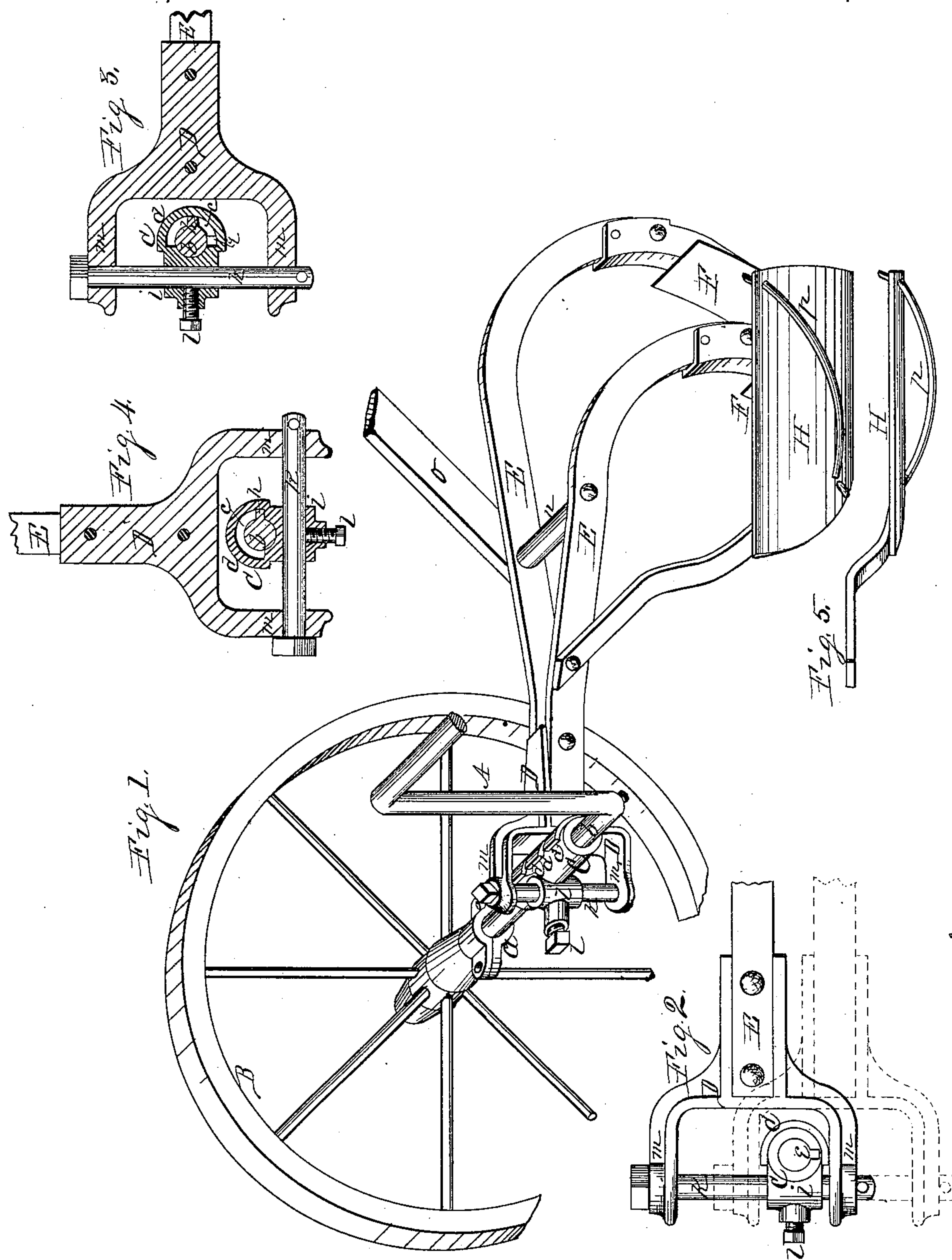


(No Model.)

W. A. KNOWLTON.
CULTIVATOR.

No. 266,482.

Patented Oct. 24, 1882.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM A. KNOWLTON, OF ROCKFORD, ILLINOIS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 266,452, dated October 24, 1882.

Application filed May 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. KNOWLTON, 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 cultivators," employed mainly for the purpose of cultivating 10 hilled or rowed crops. It however relates more particularly to the joint employed in this class of cultivators to connect the forward end of the shovel-beams with the wheeled carriage, 15 and also to the shield employed in such machines to protect the plants from injury from earth thrown by the cultivator-shovels. To improve these parts and render them more efficient is the object of this invention.

20 In the accompanying drawings, Figure 1 is an isometrical representation of my improvements, in connection with such parts of a cultivator as are necessary to show their application. Fig. 2 is a side elevation of my improved 25 joint to connect the shovel-beam with the wheeled carriage, of which Fig. 3 is a lengthwise central vertical section. Fig. 4 is also a lengthwise central vertical section, same as Fig. 3, with the parts in position to be shifted 30 on the axle of the carriage. Fig. 5 is a plan view of the shield.

In the figures, A represents a portion of a crank-formed axle-tree, having its outer end portion produced in spindle form to receive a 35 carrying-wheel to revolve thereon.

At B is represented a carrying-wheel of ordinary construction, mounted to revolve on the spindle-arm of the crank-formed axle-tree. This axle-tree is provided with a collar, *a*, fixed 40 thereon immediately inside of the hub of the wheel, and its forward end is fitted to receive a brace-rod to connect it with the frame of the machine.

At C is represented a sleeve produced to receive the horizontal portion *b* of the axle-tree 45 in a manner to oscillate thereon freely. This sleeve, at suitable intervals, is provided with internal semi-annular grooves, *c*, formed in the outward-projecting semi-annular rims *d*. These 50 internal semi-annular grooves, *c*, are connected by an internal lengthwise radial groove, *e*, extending the entire length of the sleeve, cutting

or connecting the annular grooves *c* at their lower ends. This internal lengthwise radial groove, *e*, and internal annular grooves, *c*, are 55 of such dimensions as to freely receive a pin-stud, *h*, which projects from the rear of the horizontal portion *b* of the axle-tree in such a manner that when the sleeve is in the position to receive the pin-stud in its internal length- 60 wise groove, as shown in Fig. 4, it will be free to slide lengthwise on the axle-tree; and when in its endwise movement the semi-annular grooves, or any one of them, is brought opposite the pin-stud the sleeve may be turned rear- 65 ward, as represented in Figs. 3, 2, and 1, in which the shovel-beams will be in their working position, and the sleeve will be held to prevent endwise movement on the axle-tree by means of the annular-groove connection with 70 the pin-stud. By this construction it will be seen that the sleeve may be readily adjusted lengthwise on the axle-tree to any of the semi-annular grooves to change the position of the 75 shovel-beams relatively with each other to increase or lessen the distance between them. This sleeve C is provided on its front edge with a transverse or vertical socket, *i*, adapted to receive a suitable coupling-bolt, *k*, made vertically adjustable therein, and is held in its ad- 80 justed position by means of a set-screw, *l*, screw-threaded into the forward center of the socket to engage the vertical coupling-bolt.

At D is represented the clasp portion of my improved joint-connection of the shovel-beams 85 with the axle-tree. This clasp portion has its rear end fitted to receive the forward ends of the shovel beams E, which are securely fixed thereto by suitable screw-bolts passed transversely through the parts. The forward end 90 of this clasp portion is produced in clevis form, consisting of the forward-projecting arms *m*, suitably separated in yoke form to span the sleeve portion C in a manner to permit of the required vertical adjustment of the shovel- 95 beams. The forward ends of the projecting arms *m* are perforated to receive the coupling-bolt *k* in such a manner as to oscillate thereon. The shovel-beams E are of the usual curved form, produced from suitable bar material, 100 having their rear downturned portions provided with suitable shovels or cultivator-teeth, F, in any suitable manner. These beams are supported in the usual manner by means of a

transverse brace, *n*, and are also provided with a handle, *o*, of a suitable form. From the foregoing it will be seen that I produce a joint-connection of the shovel-beams with the axle-tree 5 capable of all the functions of the joints usually employed in such machines, and also to permit of a vertical adjustment of the forward end of the shovel-beams, as represented in the solid and dotted lines in Fig. 2. This adjustment is accomplished by loosening the set- 10 screw *l* to free the coupling-bolt *D*, when the forward end of the shovel-beams can be raised or lowered to any extent within the limits of the device, for the purpose of changing the running depth of the plows, by sliding the coupling-bolt *D* through the vertical socket *l*, and 15 when in its adjusted position can be fixed by means of the set-screw.

At *H* is represented a shield produced from 20 plate material, having a bar-connection of its forward end with the forward end portion of the shovel-beams, all of which are substantially the same as like parts of cultivators now in use. This shield is provided on its inner 25 side, or on its side next the plants, with a curved rod or wire, *p*, having its forward end suitably looped in holes formed in the forward lower portion of the shield, from which point it extends rearward, curving outward from the face 30 of the shield and upward, having its rear end inserted in a hole formed in the rear upper corner portion of the plate-shield. From this construction it will be seen that this wire extends diagonally across the shield in such a manner 35 that in use it will pass under the leaves of the

plants and lift them to permit the earth thrown by the shovels to pass under them to the roots or stocks of the plants as it leaves the shield.

In this instance I have represented only such parts of a cultivator as were necessary to represent my improvements in connection therewith, and to produce a complete machine some of the parts shown will require to be duplicated, and the parts omitted may be supplied by employing such parts of machines now in use as 45 may be found applicable.

Having described the construction and operation of my improvements, I claim as my invention—

1. A sleeve capable of an oscillating motion 50 and lateral adjustment on the axle-tree of a cultivator, provided with a transverse socket-piece on its inner edge to receive the vertically-adjustable coupling, in combination with a yoke adapted to be connected therewith and 55 with the shovel-beams, substantially as described.

2. The combination, with a shield, of a curved wire or rod extending from the forward lower portion thereof to the upper rear portion, substantially as and for the purpose described. 60

3. The herein-described shield, having a curved wire or rod fixed to its inner face and extending diagonally across the same, in combination with the shovel-beams, substantially 65 as and for the purpose described.

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