(No Model.)

A. LINDGREN.

CULTIVATOR.

No. 412,106. Patented Oct. 1, 1889.

Fig. 1.

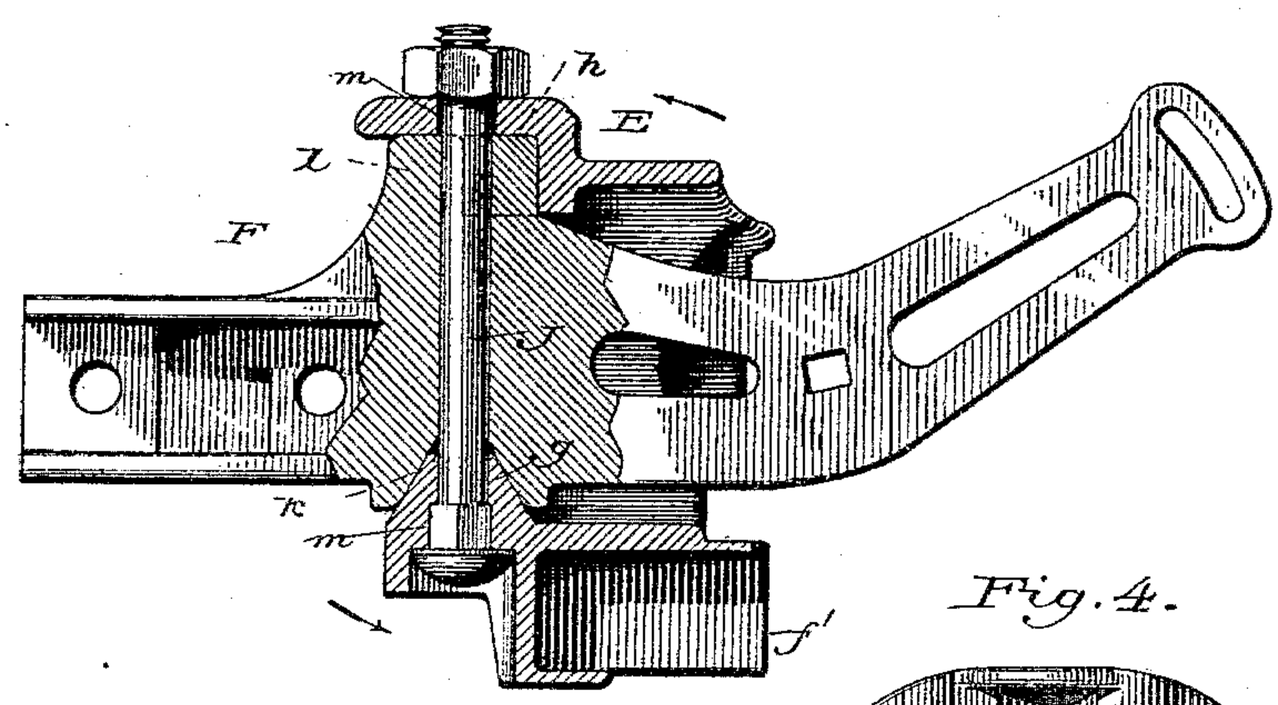


Fig. 2.

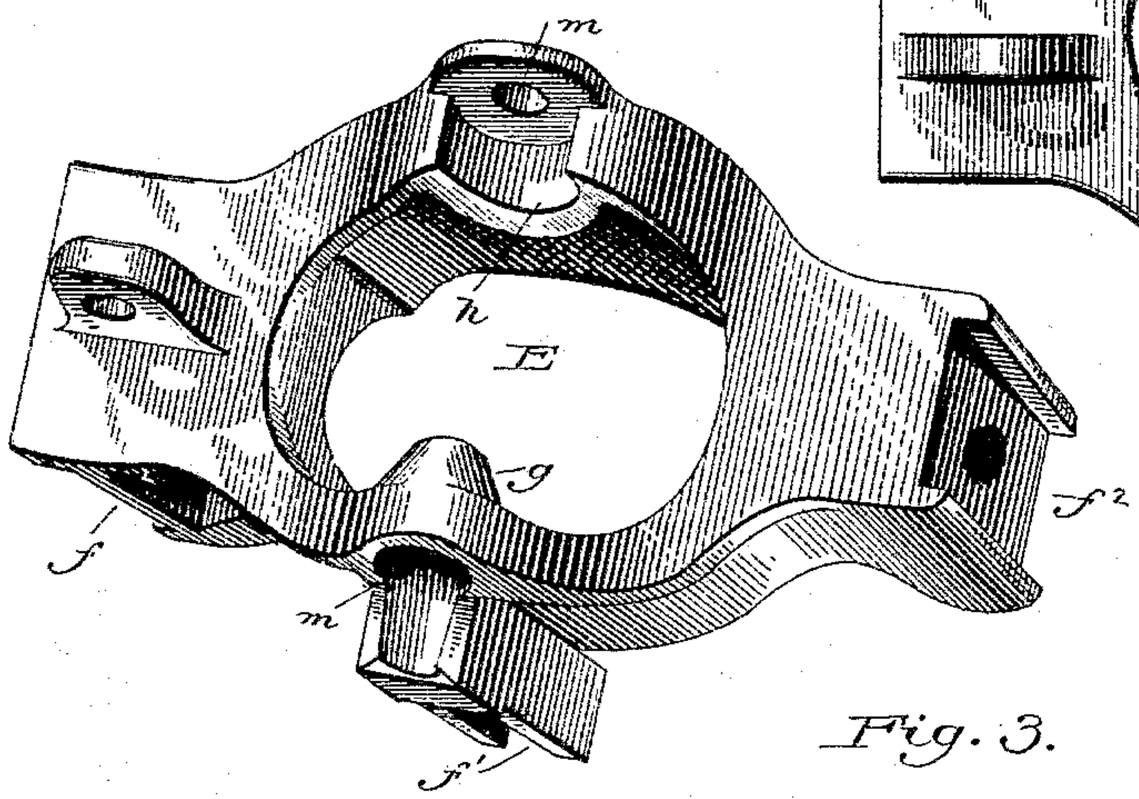


Fig. 4.

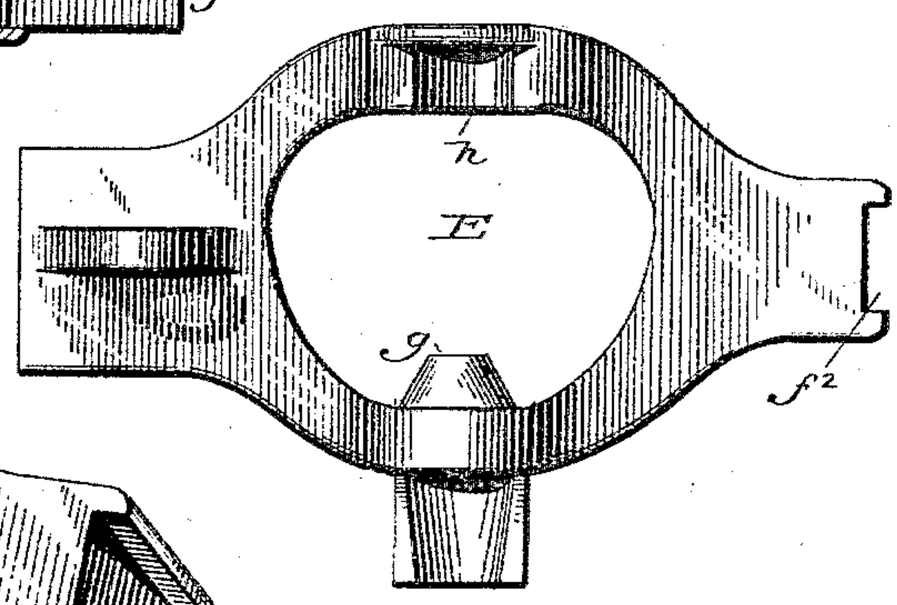


Fig. 3.

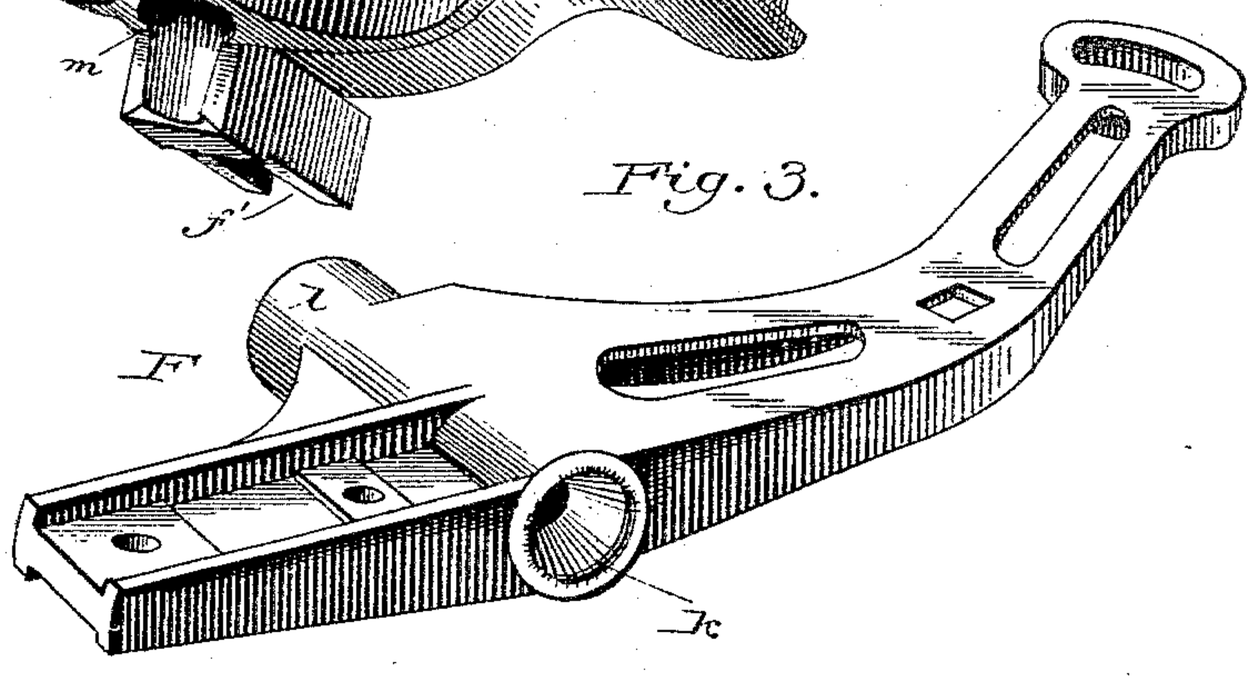
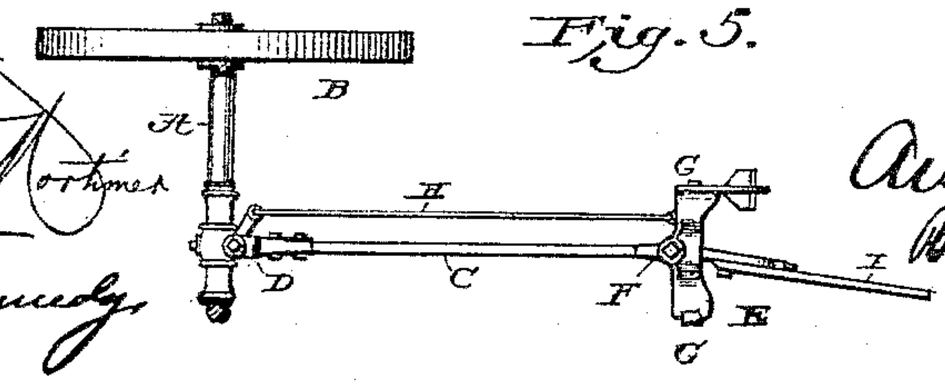


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

AUGUST LINDGREN, OF MOLINE, ILLINOIS, ASSIGNOR TO THE MOLINE PLOW COMPANY, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 412,106, dated October 1, 1889.

Application filed January 9, 1889. Serial No. 295,827. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LINDGREN, of Moline, in the county of Rock Island and State of Illinois, have invented certain Improvements in Cultivators, of which the following is a specification.

This invention relates to that class of cultivators in which the laterally-swinging beams carry at their rear ends vertically-pivoted cross-heads to which the shovel-standards are attached, the cross-heads being kept parallel with the axle by controlling-rods, so that the shovels face constantly in one direction. It pertains more particularly to those machines in which the cross-head is provided with a central opening from front to rear for the passage of the beam therethrough, as shown, for example, in Letters Patent of Wagner, July 13, 1879, No. 217,914. Its aim is to render the pivotal connection between the beam and cross-head strong, simple, and compact in form, to relieve the pivot-bolt from wear and strain, and to avoid the use of enlarged or expanded bearing-surfaces between the parts.

In the accompanying drawings, Figure 1 is a vertical axial section through my device from front to rear. Fig. 2 is a perspective view of the cross-head, looking in an upward direction from the forward side. Fig. 3 is a perspective view of the plate or arm which is attached to or formed upon the rear end of the beam or drag-bar. Fig. 4 is a front view of the cross-head. Fig. 5 is a plan view showing in outline one side of a cultivator, illustrating the manner in which the improved devices are used.

Referring to the drawings, A represents the axle of the machine; B, one of the ground-wheels by which it is sustained; C, one of the drag-bars or beams connected to the axle by a coupling D, of any ordinary or approved form, whereby the rear end of the beam is permitted to swing laterally and vertically.

E represents the cross-head carrying the shovel-standards G, and pivoted to a plate F, fixed rigidly to the rear end of the beam.

H is a so-called "parallel rod" lying alongside the beam, with the rear end jointed to the cross-head and the forward end jointed to the coupling or the axle.

I is the guiding-handle fixed rigidly to the plate E on the rear end of the beam.

In their general construction and mode of operation the foregoing parts are similar to those in other machines of this class, the pivotal connection of the cross-head and the controlling effect of the rod serving to hold the cross-head at all times parallel with the axis, although it is permitted to move laterally with the beam.

The present improvement relates solely to the manner of constructing and uniting the cross-head and the plate F. The cross-head is formed, as shown in Figs. 1, 2, and 4, with a large central opening therethrough from front to rear, and with seats or bearings *f* *f'* f^2 to receive the shovel-standards which will be bolted firmly thereto. Midway of its length the cross-head is provided at the top and bottom with vertical holes *m*, to permit the passage of a vertical pivot-bolt J. A conical pivot or stud *g*, encircling the pivot-hole *m*, projects upward into the central opening of the cross-head. Directly over this pivot, at the top of the cross-head, a seat or recess *h* is formed in the front edge of the cross-head. This seat is of semicircular form in horizontal section, and extends from the front edge of the cross-head backward therein, its walls being concentric with the vertical pivot-hole.

The arm F is shaped at one end to receive the handle and at the opposite end to admit of its being riveted or bolted to the beam, and is made of suitable size to permit its passage through the cross-head from front to rear. It is formed in the lower edge with a conical seat *k*, adapted to receive the pivot-stud *g*, and is formed at the top with an upright cylindrical journal *l*, adapted to fit snugly within the seat or cavity *h*. The arm is inserted by passing it endwise through the head, then seating the pivot *g* within the cavity *k*, and thereafter slipping the journal *l* into its seat *h*, after which the vertical bolt J is passed upward through the top and bottom of the cross-head and through the intermediate arm, as shown.

It will be observed that under my construction the wearing-surfaces are all made of small size, and that there are no hubs, disks,

or other enlargements required. Inasmuch as the strain exerted upon the shovels tends to tip the lower side of the cross-head E backward and the upper side forward, as indicated by the arrows in Fig. 1, it will be seen that the entire strain and wear are taken in my contrivance at the bottom by the pivot *g* and at the top by the bearing *h*, seated behind the journal *l*, the pivot-bolt being practically free from strain and wear. In fact, the pivot-bolt need not be relied upon in the least to support the cross-head when in action, the form of the parts and the direction of the strains being such that although the bolt J may be wholly removed the cross-head will be sustained in operative position, the bolt serving mainly to prevent the accidental separation of the parts in transporting or packing the machine.

The principal distinguishing feature of my construction lies in the formation of the cross-head to carry the shovels and the beam-plate with the rigid complementary bearings at the top and bottom, the bearings adapted to interlock and resist the tendency of the cross-head to roll forward under the strain of the shovels, so that the cross-head and shovels are held in operative position without reliance upon the pivot-bolt.

I believe myself to be the first to construct the cross-head and the beam-plate with rigid interlocking pivot-bearings at the top and bottom of such character that the parts will remain in operative position although the pivot-bolt may be removed.

In practice it is sometimes desirable to provide the cultivator with six shovels—three for each beam. In order to permit the application of the two additional shovels, I propose to provide each cross-head on the under side with a socket to receive the end of a third shovel-standard, or to otherwise form the cross-head to permit of the third standard being bolted thereto.

Having thus described my invention, what I claim is—

1. In a cultivator, and in combination with the cross-head having the shovel-standards attached and the fore-and-aft opening therethrough, the beam-plate formed with upper and lower pivot-bearings, substantially as described, adapted to interlock with the cross-head, the upper bearing to resist forward and the lower bearing to resist backward motion of the cross-head, whereby the beam-plate is enabled to hold the cross-head and shovels in operative position without reliance upon a pivot-bolt to receive the strains.

2. In a cultivator, a cross-head provided with a pivot-stud and a seat or cavity, in combination with a beam-plate provided with a cavity to receive the stud and with a journal to enter the seat.

In testimony whereof I hereunto set my hand, this 28th day of November, 1888, in the presence of two attesting witnesses.

AUGUST LINDGREN.

Witnesses:
L. A. HALEY,
W. V. RICHARDS.