EMERSON & GRAHAM.

Harvester.

No. 34,181. Patented Jan'y 14, 1862.

Fig. 2.

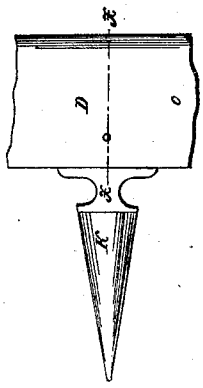


Fig. 4.

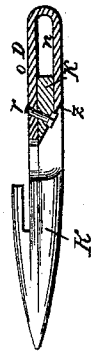


Fig. 3.

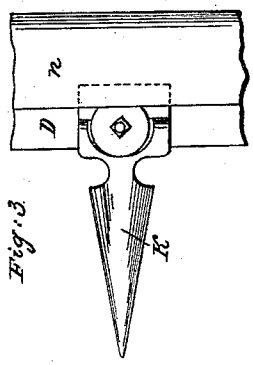
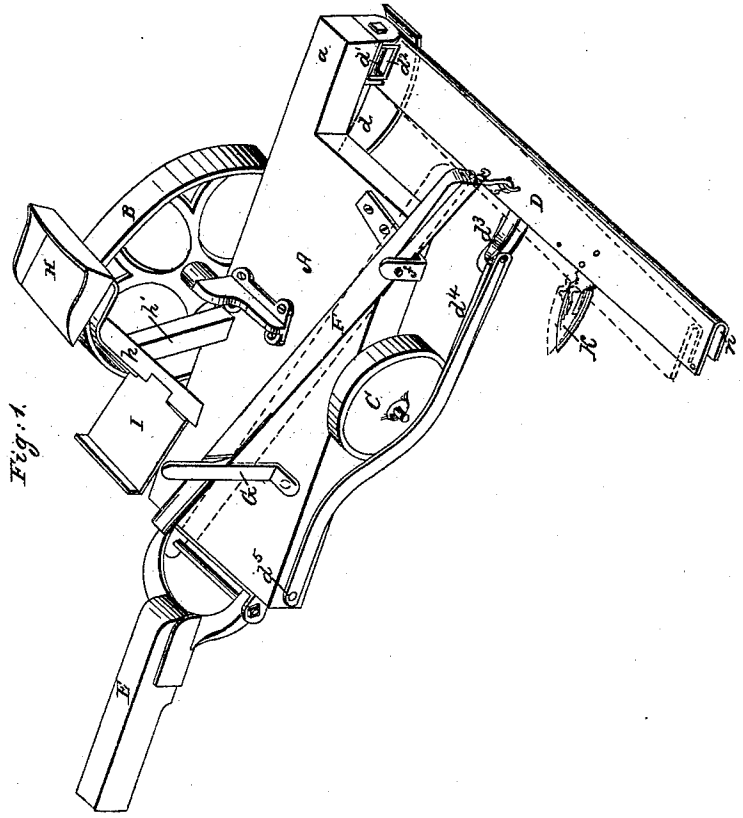


Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

RALPH EMERSON, JR., AND F. GRAHAM, OF ROCKFORD, ILLINOIS, ASSIGNOR TO RALPH EMERSON, JR., OF SAME PLACE.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **34,181**, dated January 14, 1862.

To all whom it may concern:

Be it known that we, RALPH EMERSON, Jr., and FREEMAN GRAHAM, both of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in perspective of a mowing-machine embracing our improvements as the same would appear to a spectator behind and on the divider side of the machine, the black lines representing the position of the several parts when the finger-beam rests upon the ground, as in mowing, while the red lines represent the attitude they assume when the finger-beam is raised. Fig. 2 represents a plan or view of the upper side of one of the guard-fingers and of a section of the finger-beam. Fig. 3 represents a similar view of the under side of the same; and Fig. 4 represents a side view of the same, partly in elevation and partly in section at the line *x x* of Fig. 2, showing the manner in which the fingers are secured to the beam.

The first branch of our invention relates to that class of mowing-machines which contains the following, among other features—viz., first, a gearing-frame supported and oscillating upon two wheels, (the axes of which are in the same vertical plane, or nearly so,) one of which is the driving-wheel; secondly, a tongue hinged to the front edge of the frame in such manner as to admit of a free vertical movement, but not of a lateral deviation from its ordinary direction relatively to the frame; thirdly, a finger-beam attached to the rear end of the frame by means of a hinged connection, which permits the divider end of the finger-beam to play freely up and down to conform to the surface of the ground, while the end next the frame is retained in a fixed position relative thereto; and, fourthly, a suitable lever and detent for regulating the position of the finger-beam and cutting apparatus; and our improvement consists in a novel combination of the constituent parts, whereby we produce a simple and efficient machine.

It is the object of the second branch of our invention to provide a finger-beam which shall be the lighest possible consistently with the material necessary to give the requisite strength and stiffness, and which shall also permit the guard-fingers to be readily fastened to or removed from it, and while in place to be securely retained; and to this end our improvements consist, first, in constructing the finger-beam of a harvester of a single sheet or metal bent near its middle into a U shape, but with the upper member projecting beyond the lower a sufficient distance to permit the guard-fingers to be securely fastened thereto; and, secondly, in forming a shoulder or shoulders upon the shank of the guard-finger to correspond with the edges of the finger-beam, bent as described, whereby the strength and rigidity of the beam are increased.

In the accompanying drawings, the frame A is represented as of an oblong shape, being about twice as long as it is wide, and having an arm, *a*, projecting from its rear outer corner. The frame rests and oscillates upon two wheels, B C, the axles of which are in the same vertical plane. The driving-wheel B is on the outer or stubble side of the frame, and is of larger diameter than the supporting-wheel C, which latter turns in bearings on the inner side of the gearing-frame.

The finger-beam D projects from the rear of the frame and at right angles to the path of the machine. The gearing or stubble end of the beam is provided with a shoe, *d*, upon which it slides. This shoe may be of any suitable form, but must be left free at its front end in order to permit of the oscillation of the finger-beam upon its hinge. Suitable lugs, d^2, are secured upon the upper side of the finger-beam directly over the shoe *d*. Corresponding lugs are secured upon the under side of the projecting piece *a* of the frame, and the two are united by means of a pin, d', thus forming a hinge-joint. A bracket or arm, d^3, is secured upon the finger-beam just outside of the track of the supporting-wheel. A curved drag strap or bar, d^4, is pivoted at its front end, near the point d^5, at the front of the gearing-frame, while its rear end is pivoted to the arm d^3, which arrangement permits the free vertical movement of the finger-beam, and yet aids it in resisting lateral strains. The outer end of the finger-beam is furnished with a suitable divider.

A long lever, F, is pivoted on a bracket, *f*, on the inner rear corner of the frame. Its

rear end is connected with the finger-beam by means of a link, *f'*, or other suitable connection. The front end of this lever extends near the foot-board, I, and is provided with a catch which takes into a suitable detent on the standard G, to hold the finger-beam at any desired elevation.

The tongue E is hinged to the front of the frame in such a manner as to permit it to play freely up and down, but not to yield laterally, as will be seen by reference to the drawings.

The driver's seat H is placed directly over the axle of the driving-wheel, where it is in the most favorable position for balancing the machine. It rests upon a spring secured upon a frame composed of two beams, *h h'*, inserted into the frame A, and firmly united at their upper ends. A foot-board, I, is secured upon the front beam, *h*, of this frame.

The finger-beam D is represented as composed of a single sheet of metal bent in such manner that the two parts *n o* shall be parallel to each other, and with the open side of the beam in front. The lower part, *n*, of the beam is shorter than the upper part, *o*, which latter projects sufficiently to form a ledge or flange to which the fingers are riveted.

The points of the guard-fingers may be of any shape desired, the only feature of their construction relating to our invention being the shank, which we prefer to make with a broad base and of the shape shown in the drawings. The rear end, *k*, of the shank, being that part which is inserted into the beam, is made thinner than the other part, so as to leave a shoulder, 1, upon its upper side, and a corresponding one, 2, upon its under side. To secure the fingers in place their shanks are inserted into the space between the two parts of the beam until their shoulders abut against its edges. A screw or rivet, *r*, is passed through a hole in the shank and in the ledge of the finger-beam, and is secured by a nut or by riveting. In this instance the rear ends of the shanks do not touch the back of the beam; but they may be made long enough to do so if increased stiffness is desired; or a bar of some rigid material might be inserted into the space between the shanks and the back of the beam, extending its whole length. The under side of the shank is countersunk, that the nut or the head of the rivet may not extend below the beam. The shanks are of such width that their edges are in contact with those of the adjacent fingers on each side, which renders the beam stiffer. A finger can readily be removed at any time by unscrewing the nut which holds the bolt *r* in place.

In order merely to secure the advantages of the above-described mode of fastening the fingers to the beam, we do not deem it absolutely essential that the finger-beam should be formed of a single sheet of metal, as we have used with advantage a finger-beam composed of two plates, the upper one being flat and projecting beyond the lower one, which was ⊥-shaped, the two being united in such manner that the open side of the beam should be in front, as the mode of fastening would be the same in either case. Experience has, however, taught us to prefer the bar formed all of one piece, as this mode of construction secures other advantages not possessed by those differently made. Neither do we consider it absolutely necessary that both the shoulders 1 2 should exist on the fingers, either, if well formed, being generally sufficient. Finger-beams, it is true, have heretofore been made of a single sheet of metal; but they differ very materially from our invention, which, in our judgment, possesses many advantages.

The operation of the machine is as follows: As the machine advances through the field the finger-beam runs along the ground and conforms closely to its inequalities, which it is at liberty to do by reason of its free vertical movement upon its hinge, as well as of the oscillation of the machine upon its wheels. To raise the finger-beam, the driver, with his foot, depresses the front end of the lever F to the position shown by the red lines in the drawings, and secures it in the catch on the standard G. This depression of the front end of the lever correspondingly elevates its rear end, and consequently the finger-beam. To lower the finger-beam, it is only necessary to disengage the catch from the detent, when the beam falls back to its original position by its own weight. The divider end of the finger-beam, it will be seen, is elevated more than the other, and this fulfills the conditions most required in practice, for the other parts, being behind the frame, do not require to be raised so high. If, however, an obstacle should be encountered by that end of the beam, the shoe *d* would ride over it, and thus lift the machine.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the gearing-frame, finger-beam, shoe, and drag-strap with the lifting-lever F and detent-standard G, when the whole are arranged for joint operation substantially in the manner herein described, for the purpose set forth.

2. Constructing the finger-beam of a single sheet of metal, bent near its center into a U shape, so that the upper part shall project beyond the lower a sufficient distance to form a ledge to which the guard-fingers may be secured, substantially in the manner herein described.

3. Fastening the guards to the upper part only of the finger-beam, bent as described, in combination with the shoulders upon the shanks of the fingers, substantially in the manner herein described.

In testimony whereof we have hereunto subscribed our names.

RALPH EMERSON, JR.
FREEMAN GRAHAM.

Witnesses:
J. G. MANLOVE.
W. A. TALCOTT.