

A. G. LAUGHLIN & K. G. RICE.

Improvement in Cutting Apparatus for Harvesters.

No. 132,513.

Patented Oct. 22, 1872.

Figure 1.

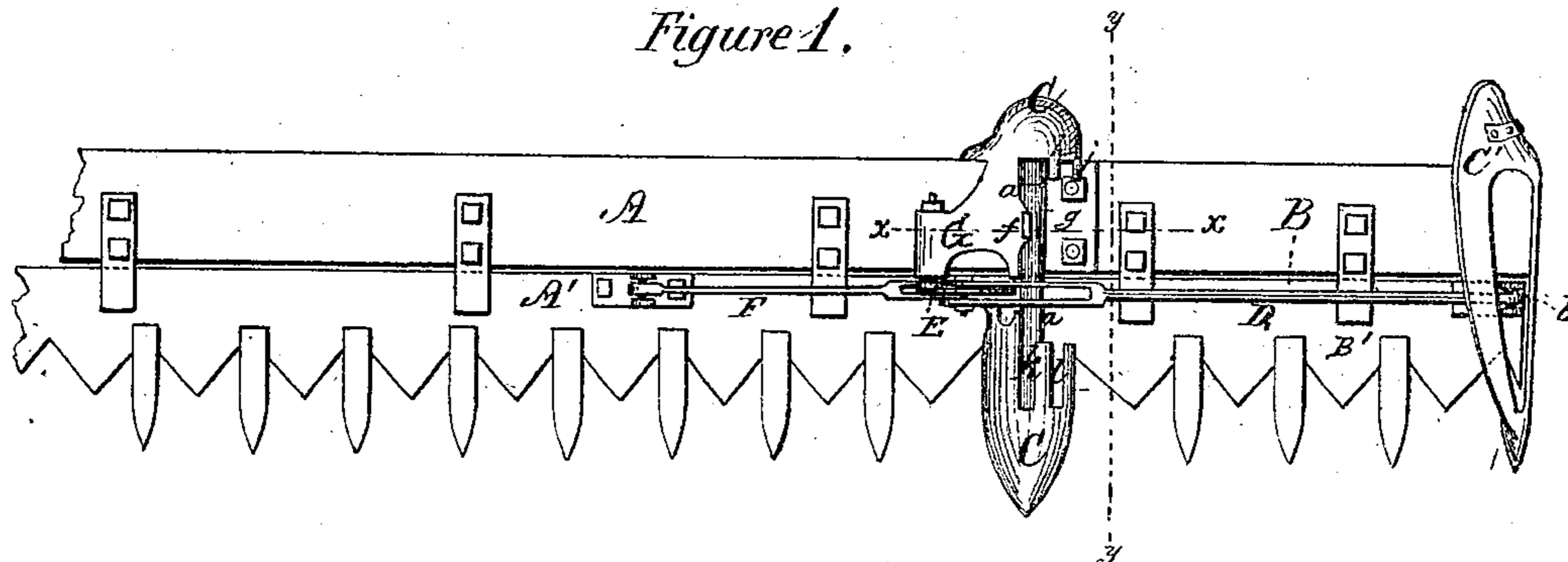
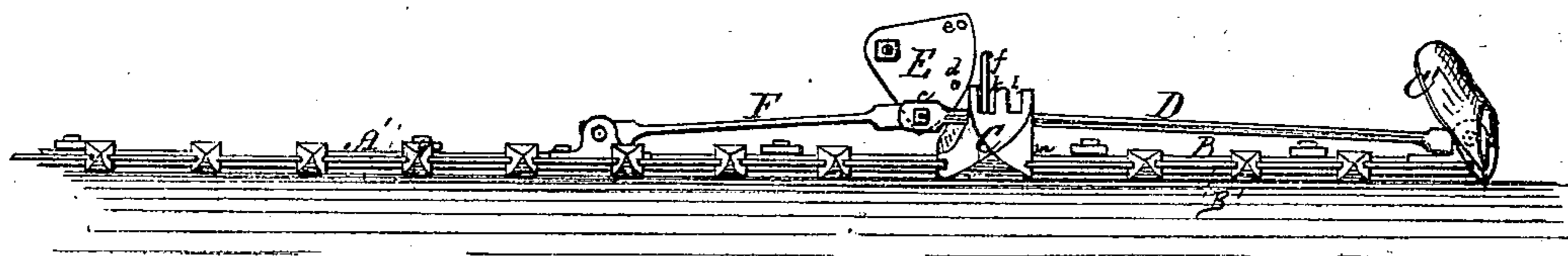


Figure 2.



Witnesses.

H. H. Young  
M. H. Rice

Inventors.

Almer G. Laughlin  
Kerney G. Rice  
By their Attorney,

J. H. Wofford

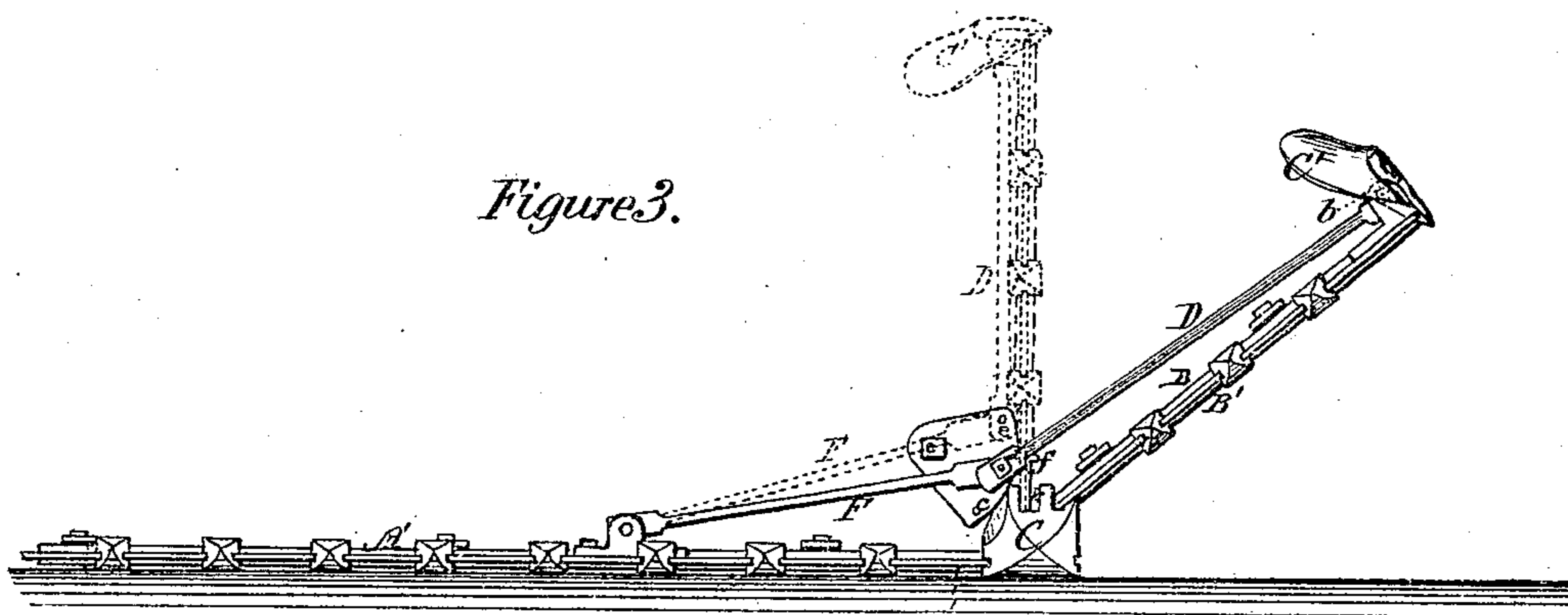
A. G. LAUGHLIN & K. G. RICE.

## Improvement in Cutting Apparatus for Harvesters.

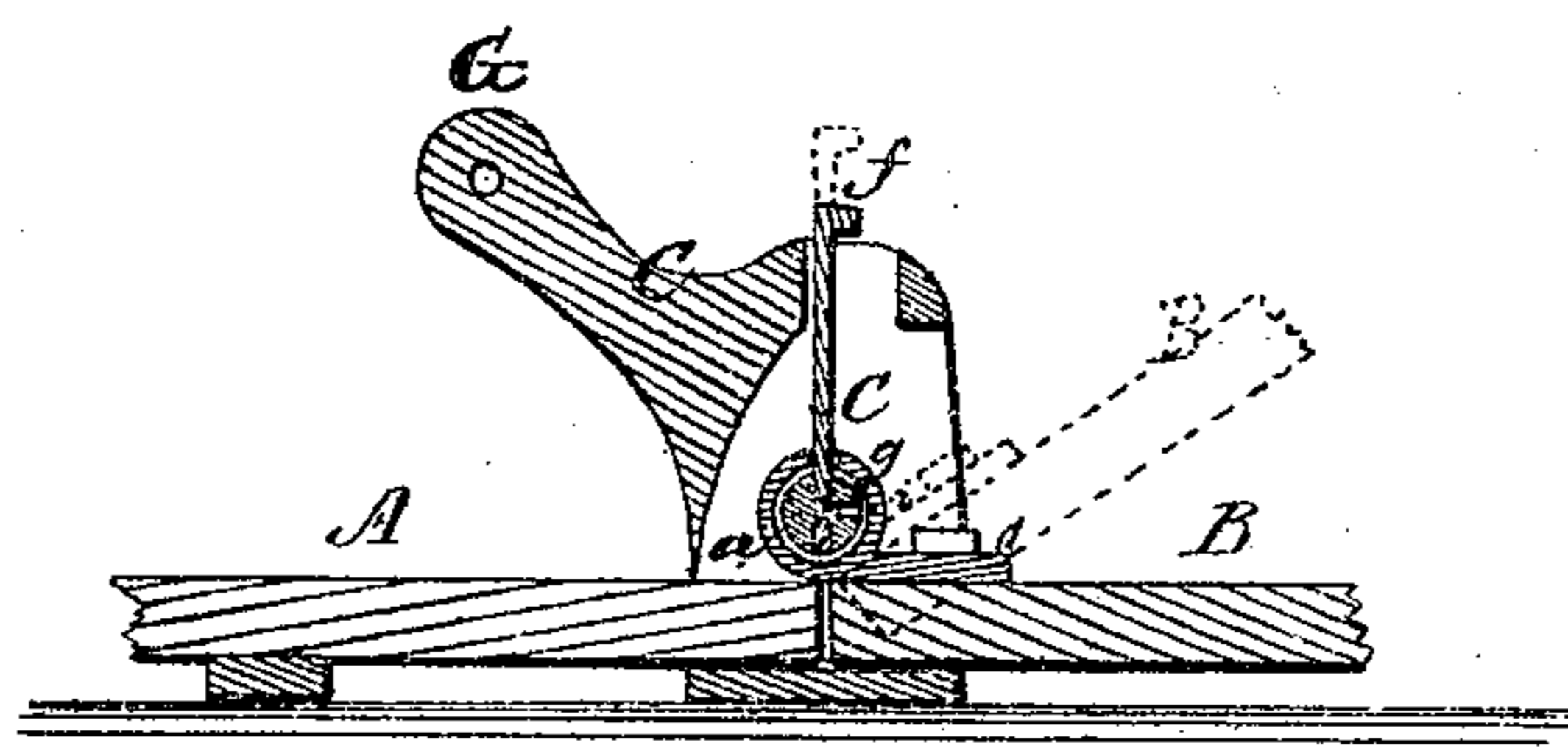
No. 132,513.

Patented Oct. 22, 1872.

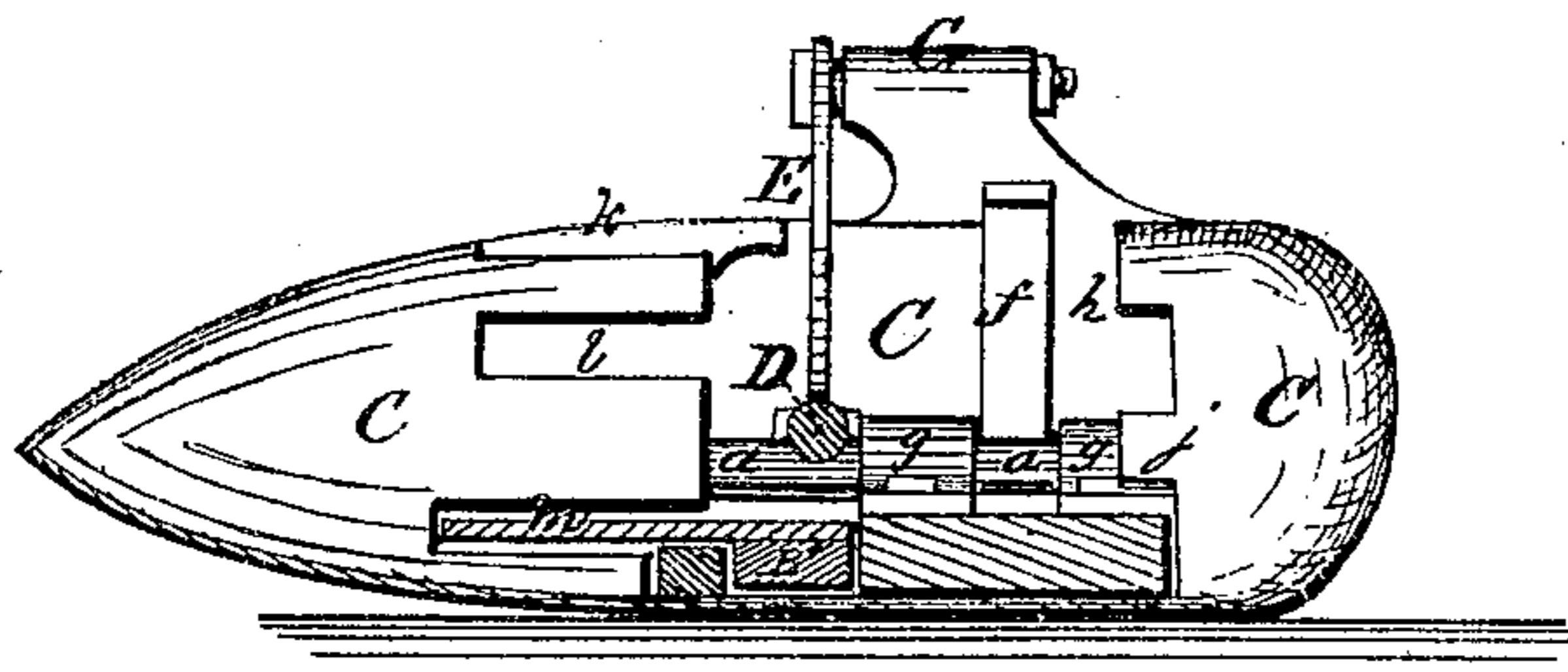
*Figure 3.*



*Figure 4.*



*Figure 5.*



*Witnesses.*

To H. H. Young  
Amherst

*Inventors.*

Abner G. Laughlin.  
Kerney G. Rice.

*By their Attorney,*

By their Attorney,  
T. H. Upberman

# UNITED STATES PATENT OFFICE.

ABNER G. LAUGHLIN AND KERNEY G. RICE, OF PROVIDENCE, KENTUCKY.

## IMPROVEMENT IN CUTTING APPARATUS FOR HARVESTERS.

Specification forming part of Letters Patent No. **132,513**, dated October 22, 1872.

*To all whom it may concern:*

Be it known that we, ABNER G. LAUGHLIN and KERNEY G. RICE, both of Providence, in the county of Webster and State of Kentucky, have invented certain new and useful Improvements in Mowing and Harvesting Machines; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing.

Our invention relates to an extension of the finger-bar and the cutters thereon, constructed and arranged in such a manner as that the outer section or auxiliary finger-bar and its cutters may be adjusted from a horizontal position to a vertical line, or to any given angle from the plane of the horizontal finger-bar; and consists, first, in having the finger-bar in two parts—the section thereof working next the standing grass or grain somewhat shorter than the main finger-bar—and hinging or connecting them together in such a manner as that the section carrying the auxiliary vibratory cutters may be adjusted and held at any angle above the horizontal section, the cutters being connected by means of two adjustable pitmen, one of which is pivoted at one end to a journal-box or pivot-point secured on the vibratory bar of the auxiliary cutters; and the other pivoted at its opposite end to a journal-box secured to the vibratory bar to which the horizontal cutters are riveted or bolted, and both of said pitmen connected at their intersecting ends to a sector-plate or crank-arm having its axis on the shoe of the main finger-bar; second, in providing the shoe secured to the main finger-bar with a lug or projection adapted to receive the axis of the sector-plate or crank-arm to which the pitmen working the vibratory cutters are pivoted, and in so forming said shoe as that the joint or hinge of the auxiliary finger-bar may be moved toward the point of the shoe, and thereby admit of its being brought up to any required angle above the horizontal line of the main finger-bar, and the knives of said auxiliary cutter-bar at the same time be permitted to pass within the appropriate channels in the shoe, serving as a bearing-surface for said vibratory knives to move on; and when the auxiliary finger-bar is at the required angle, or in a vertical position, it may be moved back on the axis of the

hinge located within the hollow of the shoe until it rests upon the required lug or notch in the shoe to receive it, thus bringing the slots in the hinge-joint of the auxiliary finger-bar in register with counterpart slots in the stationary axis-rod, to which position the auxiliary finger-bar is rigidly secured by inserting within said slots a suitable key or pin.

In the accompanying drawing, Figure 1, Sheet 1, is a plan or top view of a part of an ordinary finger-bar used on mowing and reaping machines, illustrating the construction and arrangement of our improved shoe, and showing the manner of constructing our auxiliary finger-bar and holding it to the horizontal finger-bar when adjusted to work on a horizontal plane with the main finger-bar; Fig. 2, Sheet 1, is a front elevation of the same in like position; Fig. 3, Sheet 2, is a front elevation, showing the auxiliary cutters adjusted to about an angle of forty-five degrees; also illustrating by dotted lines the position of the auxiliary cutters when adjusted to cut vertically; Fig. 4, Sheet 2, is a longitudinal vertical section in line *x x*, showing the parts enlarged to more clearly illustrate the axis of the hinged joint within the shoe; and Fig. 5, Sheet 2, is a transverse section in line *y y*, Fig. 1, showing one side of the shoe secured to the main finger-bar in elevation to illustrate the position of the hinge-joint and its key within the shoe, and also to show clearly the bearing-surfaces or lugs on said shoe.

A is the horizontal bar, to which are secured the guides for the vibratory cutter-bar A' to move in, and to which is also secured the fingers for the cutters to vibrate in. The auxiliary finger-bar B is provided on one end with a lightly-made shoe, C', and hinged or pivoted at its other end to an axis, *a*, within the shoe C, which connects it with the main finger-bar A. The auxiliary cutter-bar B' is connected to the main cutter-bar A' by a pitman, D, pivoted to a journal-box or pivot-joint, *b*, secured to said auxiliary cutter-bar, and the other end of said pitman connected with a sector-plate, E, at *c* when the auxiliary finger-bar B is in a horizontal position, at *d* when at an angle of forty-five degrees or thereabout, and at *e* when adjusted vertically. We contemplate, when required, having other apertures in the sector-plate E, so that the angle of the finger-bar B

may be varied as desired, and not confined to the three adjustments shown in the drawing. A second pitman, F, one end of which is likewise pivoted to the sector-plate E, as above described, has its other end pivoted to the main cutter-bar A'. Thus the vibratory motion of the main cutter-bar A' is transmitted, through the pitmen D F and sector-plate E, to the auxiliary cutters, and by securing the finger-bar in position by inserting the key *f* in the slots in register on the journal-face of the hinge *g* and the axis *a* the two finger-bars may be rigidly secured in a horizontal position, as shown in Figs. 1 and 2, Sheet 1, of the accompanying drawing; thus, when the grass or grain is very thin or light, enabling the operator to extend the width of the swath the distance of the length of the auxiliary finger-bar. When the grass or grain is much tangled and, as is often the case, so matted upon the ground as to greatly retard the proper working of the machine, the operator has only to disconnect the pitmen D F, which are designed to be used when both finger-bars are on the horizontal, and substitute therefor other pitmen suited in length for such adjustment of the auxiliary finger-bar B as may be required, the connection of the pitmen to the sector-plate being required whether the machine be arranged for cutting a horizontal swath only, or when the auxiliary cutters are adjusted to cut down the tangled grass or grain by a direct vertical cut, or are adjusted to any oblique position. In either case the vibratory motion of the horizontal cutters is imparted directly by its pitman and sector-plate or crank-arm, through the other pitman, to the auxiliary cutters B', the motion of said cutters being the same in effect however adjusted.

The tangled grass or grain, by reason of its resistive power on the finger-bar at or near the end to which the shoe is secured, consequent upon leverage occasioned by forcing its way through tangled grass at such a distance from the motive mechanism of the machine, greatly retards the working of the cutters, and not unfrequently occasions their stoppage by reason of choking up. This difficulty we obviate by using the auxiliary finger-bar and cutters, so arranged that their line of cut may be varied according to the tangled condition of the grass or grain, and by a simple substitution or exchange of pitmen the same cutting-surface may be brought to act horizontally, and thus, in light grass or grain, give the advantage of cutting a wider swath.

Each machine should be furnished with a set of pitmen adapted in length to the variations caused by adjusting the auxiliary cutter-bar to a required angle.

The shoe C is provided with a central cavity to receive an axis or rod, *a*, constituting a way for the hinge secured to finger-bar B to move on, which rod is furnished with a suitable number of slots, *i*, to receive the end of a key or pin, *f*, which passes down through corresponding slots on the upper journal-face of the hinge into such of the slots *i* as will come in register therewith, the auxiliary bar being thus secured rigidly in a given position, and the cutters thereof permitted to vibrate in conjunction with the horizontal cutters so as to cut a straight clear edge throughout the swath. The shoe is provided with suitable projections *h j* and cavities *k l m*, which may be cast as a part of said shoe C, (or otherwise fastened thereto,) to receive and support the finger-bar B and form the bearing-surfaces for the traverse of the auxiliary cutters B', in number to be equal to the adjustments the said finger-bar is arranged to have.

The bearing-surface or journal-box G, in which the sector-plate or crank-arm E has its axis, may also be cast as a part of the shoe C, as shown in the drawing, or secured thereto, as desired.

#### *Claims.*

1. The cutter-bar A', in combination with the adjustable auxiliary cutter-bar B', adapted to be held at different angles of adjustment, substantially as and for the purpose herein described.

2. The shoe C, furnished with a journal, G, forward slots *k l m*, rear notches or lugs *h j*, and interior axis-rod *a*, in combination with the hinged finger-bar B, all arranged and operating as herein set forth.

3. The combination of the sector-plate E, pitmen D and F, cutter-bars A' B', shoe C, axis-rod *a*, with the horizontal finger-bar A, auxiliary finger-bar B, and hinged joint *g*, all the parts being constructed and operated in the manner and for the purpose as hereinbefore set forth.

In testimony whereof we have hereunto signed our names.

ABNER G. LAUGHLIN.  
KERNEY G. RICE.

Witnesses:

L. A. DORIS,  
I. K. GIVENS.