



# UNITED STATES PATENT OFFICE.

STEPHEN HULL, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR TO HIMSELF  
AND ISAAC W. WHITE, OF SAME PLACE.

## IMPROVEMENT IN CUTTERS FOR HARVESTERS.

Specification forming part of Letters Patent No. 39,401, dated August 4, 1863.

*To all whom it may concern:*

Be it known that I, STEPHEN HULL, of Poughkeepsie, in the State of New York, have invented a new and useful Improvement in Cutting Apparatus for Harvesters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top view, and Fig. 2 an inverted view, of my improvement. Fig. 3 is a vertical transverse section through the finger-beam and sickle-rod. Fig. 4 is a front view of the cutting apparatus with the wings slightly modified.

The same letters of reference in the several figures indicate corresponding parts.

My guard A has the rear portion of the horizontal slot B left open, the same as the well-known "Hussey guard," in order that it shall combine the properties of keeping itself clear of obstructions both on top and underneath.

As an improvement on the open-cap guard, I have adopted the following construction and combination of contrivances, to wit: The wings *a* of my guard are extended laterally, so that those wings of one guard may adjoin wings of other guards, and thus form a continuous top bearing for the sickle, as indicated at *b*. I also have depressed the rear portion of the guard, so that it stands below the horizontal base or plane of the slot B. This depression, for a part or the whole of its extent, I have formed on an incline plane or bevel, as at *d d'*, thus forming a deep shoulder, which constitutes both a front bearing for the whole depth or thickness of the finger-beam and also of the sickle-rod. The front side of the metal on which the depression or shoulder *d d'* is formed is of a corresponding form with the depression, and constitutes an under-beveling or very slightly-curved shoulder, as indicated at *m*. By reason of this corresponding form the wings offer but a very slight obstruction to the dirt, turf, &c., that may come in their path; and these wings can readily float or glide up over the same.

If the wings presented a vertical front surface, the dirt, turf, &c., would be liable to accumulate about them in such quantity as to interfere with the perfect action of the sickle upon the grain. This corresponding form is attained

with greater advantage from having the seat for the front of the finger-beam and knife-rod on a bevel or slight curve, as at *d*, as this obviates the necessity, as with a square-cornered seat, of having the metal of the wings very thick and heavy. The bevel depression also enables me to set the upper surface of the finger-beam below the plane *c* of the slot of the guard, and also enables me to have the knife-rod bear against the back of the wings, while the sickle bears on the top of the same.

The finger-beam C, I construct with a plain top and base. I also make it without a continuous shoulder near its rear edge for the sickle to bear against. The front edge or lower corner of the finger-beam is beveled off, so as to exactly fit the depression *d* of the wings, as indicated at *n*. This secures a firmness in the structure. The base of the finger-beam is made to fit the horizontal surface *e* of the flange *f* of the guard. The flange *f* runs back from the base of the bevel depression *d*, and is bolted to the under side of the finger-beam, as shown at *g*.

The outer edge of each flange may have the form shown, or any other similar form which will leave a space, *h*, between every pair of flanges, so that the accumulating dirt, &c., may have a ready escape after the wings have passed it, and thus be obviated much resistance and lifting of the finger-beam from the surface of the ground. Were not these spaces provided, the dirt, &c., would lift the cutting apparatus until the same had been passed over by the rear edge of the finger-beam; whereas with them this is only the case until the wings have passed over the obstructions.

In Fig. 4 I have shown the wings as being curved, or so shaped as to present, when joined, a compound space, as indicated by the letter *w*. This is to secure the end just described, and also further it by exposing the bevel of the finger-beam to the resisting dirt, turf, &c. This plan is not shown in Figs. 1, 2, and 3. I however regard it as a good plan, as it affords a chance for the turf and dirt to slip under the finger-beam into the spaces between the flanges *f f*, the bevel-edge of the finger-beam greatly favoring this result.

The sickle D is composed of blades made separate from one another and riveted to the



top of the rod D. The front edge of this rod bears against the shoulder or plant  $d'$  thereof, as shown. The base of the rod D rests on the top of the finger-beam. Now, to obviate the continuous back shoulder or guide on the finger-beam for this rod, I arrange a series of separated guide-lugs, E E, at suitable distances apart, on the top of the finger-beam, so that they are in rear of the sickle-rod, and also overhang the same, as represented. I intend by this that the finger-beam, with the front shoulder,  $d'$ , shall not constitute a continuous groove for the knife-rod to move in, and therefore, in one sense, I may say, my knife-rod is not guided by the finger-beam.

If a continuous groove extending from one end of the finger-beam to the other is used, the dirt, trash, &c., may get into the groove behind sickle or knife-rod and cause a bind between the parts; but with the separate guide-lugs, set some distance apart, all the necessary guiding functions of the continuous groove or shoulder are obtained, and at the same time clogging is obviated, as the spaces between the lugs E E will allow the dirt to escape back from the sickle-rod.

By my invention the sickle-blades are supported horizontally and its rod vertically, and the whole top surface of the finger-beam is thrown below the plane  $c$  of the slot of the guards or fingers, and the knife-rod is kept free from dirt, and thus bind thereof prevented. The result which I have attained, after much

experiment and expenditure of time and labor, is a very important one—to wit, combining in one cutting apparatus the several offices above stated.

With my invention and the invention of Obed Hussey combined, the operation of the cutting apparatus of harvesters of all kinds is greatly enhanced, because while the open guard of Hussey prevents clogging above the cutters my improvements prevent clogging below them, and also in rear of the sickle-rod.

Disclaiming all closed-cap guard-fingers, what I claim as my invention, and desire to secure by Letters Patent, is—

An open-cap slotted guard-finger provided with the depressions  $d$   $d'$  below and between the elevated plane  $c$  and the lowered plane  $e$ , and with the flanges  $b$   $b$ , so that the finger-beam and the knife-rod have a front bearing about equal to their combined thickness below the plane  $c$ , and the sickle a continuous top bearing on the flanges  $b$   $b$ , in combination with separated or spaced back guides, E E, which allow a free rear discharge of dirt from below the sickle, substantially as described.

Witness my hand in the matter of my application for patent on cutting apparatus on harvesters.

STEPHEN HULL.

Witnesses:

EDWARD WHITE,  
GEO. D. OLIVET.