

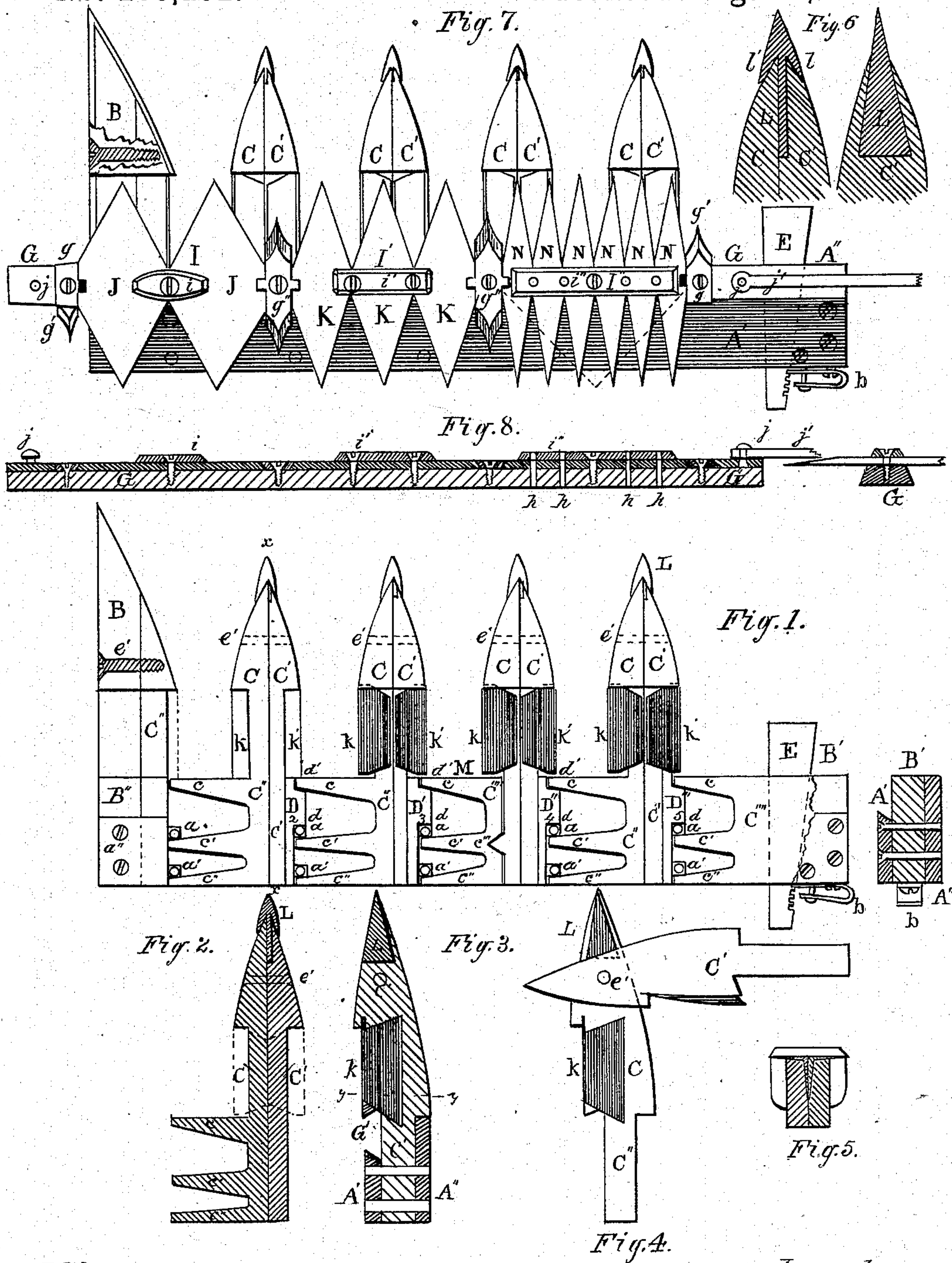
(Model.)

E. S. SNYDER.

CUTTING APPARATUS FOR HARVESTERS.

No. 283,292.

Patented Aug. 14, 1883.



Witnesses

John Lockie
Alf Mans.

Inventor

Elisha S. Snyder
Per Wm. R. Singleton
Att'y.

UNITED STATES PATENT OFFICE.

ELISHA S. SNYDER, OF SNYDER'S MILLS, WEST VIRGINIA.

CUTTING APPARATUS FOR HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 283,292, dated August 14, 1883.

Application filed February 21, 1883. (Model.)

To all whom it may concern:

Be it known that I, ELISHA S. SNYDER, a citizen of the United States, residing at Snyder's Mills, in the county of Jefferson and State of West Virginia, have invented certain new and useful Improvements in Cutting Apparatus for Harvesters, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in harvesting-machines; and it consists in certain peculiarities of construction, which will be hereinafter fully described, and pointed out in the claims.

15 In the drawings forming part of this specification, Figure 1 is a plan view of the finger-bar, having a part of the top plate removed, and showing the manner of securing the fingers in the bar. Fig. 2 is a detail of one of the fingers in section. Fig. 3 is a transverse section of the finger-bar and a finger on *xx* of Fig. 1. Fig. 4 shows the method of removing the knives. Fig. 5 is a section on *yy* of Fig. 3; Fig. 6, details of the protecting-point of the finger. Fig. 7 is a plan view of the knife bar and blades placed in position in the finger-bar. Fig. 8 is a longitudinal vertical section of the knife-bar, showing the method of securing the blades by sections on the bar.

30 The finger-bar is composed of two parts, an upper plate, *A'*, and an under and wider plate, *A''*. These plates are of any width, length, and thickness suitable for convenience and strength. At one end is the shoe *B*, of the usual construction, permanently secured to the bar, in any suitable manner, between the two plates *A' A''*. At the opposite end of the bar is an intermediate piece, *B'*, also securely fastened between the plates *A' A''*, the inner edge of which is beveled to suit the large wedge *E*, and to this piece *B'* is attached the joint for the vertical movement of the bar. At suitable distances apart are the rivets *aa'*, placed in pairs across the plates *A' A''*. These 45 rivets may be round or square; but I prefer the square form to serve as solid bearings for the surfaces which are to impinge against them, as will be hereinafter described. At the end piece, *B'*, of the finger-bar, on the outside, is a spring-latch, *b*, to hold the key *E*. In the spaces between the rivets *aa'* are placed the projecting tines *c c' c''* of the fingers *CC'*, which

are formed of two pieces, and which, when fastened together, form but one finger. They are made in two parts, that the knife-blades *kk'* and the point *L* may be secured and held between them, and yet can easily be removed for renewal or sharpening, as will be hereinafter explained. The part *C* has a stem, *C'*, supplied with projecting tines *c c' c''*, all cast in one piece. Another method can be used for the construction of these stems, as seen in Fig. 1, *M*, where the tines *c c' c''* are on a separate piece, *C'''*, and the stem *C'* is uniform in width, except at *c'''*, where there is an angular projection, which is to fit into a corresponding notch in the back of *C'''*. I, however, prefer the tines to be cast in one piece with the stem *C'*, in which case there is less metal required and the whole is more simple. 70

In Fig. 1 is shown the manner of securing the finger-stems in their places in the bar. Commencing at the shoe *B*, the stem *B'* of that finger is straight, and enters between the abutment *a''* of *A* and the first pair of rivets, *a a'*. A screw, *e'*, is then put in the hole at the point of the shoe *B*, and the shoe and finger *C'* are secured together. Next in order place a finger, *C C'*, with the tines *c c' c''* in the space between the first and second pair of rivets, *a a'*. The tines *c c' c''* will be back of the rivets *a a'*. Next place a block (lettered *D* in the drawings) back of *C'*. This block is a key, and has a shoulder, *d*, which rests in front of the rivet *a*. The block *D* has a notch, *d'*, into which is fitted the end of tine *c* of the next finger, which is placed in the second space between the second and third pair of rivets *a a'*, and back of this finger is placed a second key, *D'*, and thus continuously are placed the fingers and keys until the last one is in, when the rectangular key *D'''* is replaced by a wedge, *E*, which is driven tightly in until the whole set is tightly secured. The spring-latch *b* is then turned so as to catch into one of the notches in the wedge *E*, and prevents its withdrawal. 95

The finger-stock is constructed of two parts, *C C'*, as before stated, and the drawings Figs. 2 and 4 show these parts. By this construction I am enabled to secure in the finger-stock, first, the two ledger-blades *kk'*, which are turned at right angles, and whose ends are dovetail in shape and similar, and both edges 100

of the blades are sharpened, so that when the one in use becomes dull or injured the finger can be easily drawn out of the bar, and by means of a screw or rivet, *e'*, which holds the outer ends together, the two parts may be turned like a pair of shears on the pivot, by which the blades are released from the joint and turned as may be required, or altogether removed for sharpening, as seen in Fig. 4. These blades *k k'* are about one-quarter of an inch wider than the stem on which they rest, so as to get a better hold upon the grain-stalks. The guard part of the finger is just as wide as the two blades, so that each edge is protected. In consequence of the use of the stationary blades *k k'* in the fingers, against which the grain-stalks rest when the reciprocating knives begin to cut them, I am enabled to dispense with over-guard pieces, heretofore used to hold the straw, and which were always in the way in stony or pebbly ground, as small stones and pebbles would get between these guards and the blades, give much trouble, and cause the gapping of the edge or breaking of the blade. By dispensing with these upper guards, as shown, these stones and pebbles roll off between the fingers. At the end of the fingers a metal point is inserted, as shown in Fig. 6. The shank of it, *L*, is dovetail shape, and is sunk into the body of the guard *C'*, the point of the guard going under the barb *l*. The point of the finger *C* also goes under the other barb, *l'*, when turned on its pivot-screw *e'*, and when the two sections *C C'* are screwed together the point *L* is securely held in place, and yet in case of injury can easily be removed and another one inserted in its place. The barbs *l l'*, covering the points of the two parts *C C'*, also brace and clamp the finger at its point. In Fig. 7 is represented the knife-bar *G* in its true place in the finger-bar *A*. I have shown three different groups of cutting-blades—viz., *I*, having two blades; *I'*, having three, and *I''*, having six blades. Heretofore the cutting-blades have been separately fastened to the knife-bar. In this system I use groups of any number of blades, from two upward, within a practicable number, and I fasten each group or section by one fastening only, so that when any blade in a group is injured or the group becomes dull they can be easily removed and reversed, as provided for, or replaced by new ones. These blades, as shown, are made with double cutting-edges, so that they can be reversed in the field when they are injured or when they become dull. I also have arranged the knife-bar so that it also can be disconnected from the pitman-bar when reversed, so that the rear side with the sharp blades can take the place of the other blades which have become dull from use. The blades are secured in the sections according to the number in the following manner:

G is the knife-bar, which is dovetailed in cross-section to fit the groove *G'* in the finger-bar. At each end of this knife-bar *G* is a stop, *g*, having the inner edge dovetailed, and a cut-

ting-edge, *g'*, on the front of one and in rear of the other. In section *I* there are only two blades, *J J*. In the drawings a strap, *i*, is used, by which both blades are held down by means of one screw. Instead of the strap *i*, a large headed screw can be used, when the hole in the blades should be countersunk for the screw-head. The outer edges of these two blades are dovetailed to suit the bevels under the stop *g* and the interior stop, *g''*, which has also dovetailed edges and a projecting tongue on each side, which is also dovetailed to fit into corresponding notches in the edges of the blades, and they also have cutting-blades at each end. In group or section *I'* there are three blades, *K K K*, similarly formed to those in *I*, and secured by a longer strap, *i'*, and with two screws. Said strap can be dispensed with, and the two screws will secure the three blades in a similar manner to the other section, *I*. In section *I''* there are six blades, *N N*, &c., and another method is used, being an additional security to the strap *i''*, which is held also by only one screw. Underneath the strap, and cast or permanently attached to it, are four dowel-pins, *h h*, &c. These pins enter holes formed one-half in the edge of each blade and plain holes in the bar *G*. When the strap is put over the blades, these pins prevent the longitudinal movement of the blades, and the central screw keeps the strap and all of the blades down upon the bar. The two outside blades have beveled edges and notches, to correspond with the stops *g''* and *g*, like the blades in sections *I I'*. These blades *N N* are placed on the bar in the following manner: No. 1 is inserted under the dovetailed edge of the stop *g''*. Then the others are placed side by side, until the sixth one is slid under the dovetailed edge of the outer stop, *g*. The strap is placed over the blades by inserting the dowel-pins into their corresponding holes, and the central screw is screwed down, and the whole series is clamped and securely braced. The advantage of this arrangement is that so soon as the cap or clamp is removed all the blades or any one is ready to be taken out, reversed, or replaced, as may be necessary, thus saving the time heretofore wasted in the old way of unfastening, which was by cutting the rivets secured in the bar below.

In the old form of using only a single blade having only two cutting-edges there is the minimum of length in the cutting-edges. In my improved series of blades, in the same space on the bar I obtain a maximum of length to the utmost practicable extent, as, in the use of six blades, having twelve cutting-edges, there is four times the length of cutting-edge to the single blade with two edges only, as seen in dotted lines in Fig. 7. This is ascertained by actual measurement. Moreover, by thus dividing the work to be performed into six portions it is very evident that shorter blades may be used. As each single blade of the group passes the stationary blades *k k'* on the finger in the reciprocation of the knife-bar, that blade

does as much work as the edge of the single blade of the old form; and, as there are six of these blades in each group, it is evident that the amount of work done by these six must be greatly in excess of the work by the single blade. While the machine is moving forward in the field the cutting is more effectually done and with less force required by the team.

Between the sections I, I', and I'' the stops *g'' g''* are provided with cutting-blades at each end. By inspecting Fig. 7 it will be observed that these cutting-edges of *g''* are in the angles between adjacent groups of blades, and will thus cut such stocks of straw as may escape the other knives.

I claim—

1. The combination, with the cutter-bar, of the knives provided with notches, and the intermediate clamps having cutting-points, and provided with beveled edges to overlap and to receive said knives, and with tongues fitted to the notches, substantially as and for the purpose described.

2. The combination of the cutter-bar, the knives, the clamps to fit over the edges of the blades, the clamping straps and screws, substantially as and for the purpose described.

3. The fingers C, having stems C'', provided

with the tines *c c' c''*, in combination with the finger-stems C', blocks D, and the finger-bar, substantially as and for the purpose described.

4. The combination of the finger C' and the guard B, united by the pivot-screw *e'*, and both attached to the bar, substantially as and for the purpose described.

5. The fingers of a harvester formed in two parts and connected by a pivot-screw, *e'*, at the point, and held in the bar by the tines *c c' c''* and block D, substantially as and for the purpose described.

6. The cast-metal plate L, dovetail in form one way, and with barbed ends *l l'*, substantially as and for the purpose described.

7. In a finger-bar for harvesters, the longitudinally-divided fingers, in combination with the ledger-plates constructed as described, and inserted between the sections of the finger-stems, and extending beyond the same laterally, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

ELISHA S. SNYDER.

Witnesses:

GEO. VAN NAME,
JOHN LOCKIE.