

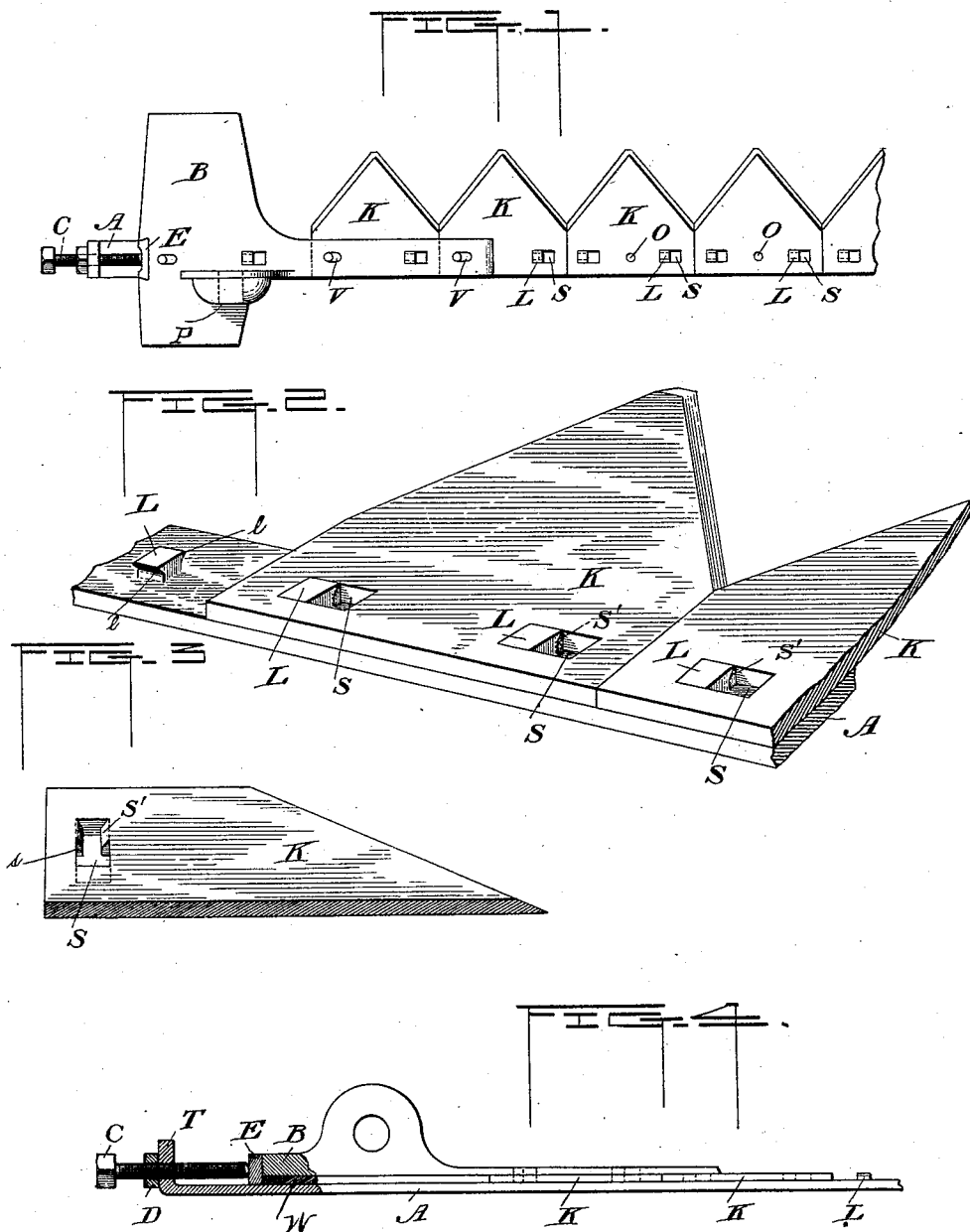
(No Model.)

J. J. ELLSWORTH.

CUTTER BAR FOR MOWING AND REAPING MACHINES.

No. 489,433.

Patented Jan. 3, 1893.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN J. ELLSWORTH, OF ALMA, MICHIGAN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO EDWIN ASH, OF BALTIMORE, MARYLAND.

## CUTTER-BAR FOR MOWING AND REAPING MACHINES.

SPECIFICATION forming part of Letters Patent No. 489,433, dated January 3, 1893.

Application filed July 27, 1891. Serial No. 400,874. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. ELLSWORTH, a citizen of the United States, residing at the village of Alma, in the county of Gratiot and State of Michigan, have invented certain new and useful Improvements in Cutter-Bars for Mowing and Reaping Machines, of which the following is a specification.

This invention has for its object to provide novel means for connecting the knives to the cutter bar of a reaping or mowing machine, and it consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed reference being made to the accompanying drawings, in which—

Figure (1) shows a plan view of a portion of a cutter bar, illustrating the head and the method of attaching the head to the bar; Fig. 2, is a perspective view of a portion of the cutter bar and cutters on an enlarged scale; Fig. 3, is a detail perspective view of a part of one of the cutters detached; and Fig. 4, is a side elevation of the invention, partly in section.

Similar letters refer to similar parts throughout the several views.

A. represents the cutter bar, which preferably has a flange or lug T. for the purpose of supporting the screw bolt C.

C. represents a screw bolt which passes through the projection T. and bears against the stop E., which stop E. may be made integral with the base plate B of the cutter head P. The cutter head is provided with an opening which engages with the crank or pitman which operates or gives a reciprocating motion to the cutter head. The base plate B of the cutter head preferably projects along the cutter bar the distance of the width of two knives or more, as shown in Figs. (1) and (4).

The cutter bar is provided with a series of dove-tail shaped projections, which are either attached to the cutter bar or made integral therewith. These projections are shown by L. L.

K. K. represent the knives. Each knife is provided with apertures, which apertures are shown by S. S', S. S'. Each aperture is composed of two parts, the larger part S. allowing the projection L. to slip through readily, while the smaller part S', which is flaring or

beveled, engages with the dove-tail projection L., as shown in Fig. (2).

The knives which are held between the base plate B and the bar A are preferably provided with round openings V. V. which fit projections upon the bar. The form of these openings, and the form of the projections may, however, be varied.

W. is a binding plate which is placed between the stop E. on the head and the first knife on the cutter bar, that is, between the stop E. and the knife nearest the head of the cutter bar. The object of this binding plate is to convey the pressure caused by the bolt C. to the knives, in order to bind and hold the knives upon the dove-tail projections on the cutter bar. The bolt C. is provided with a head, preferably rectangular, so that the same may be turned up and press upon the stop E., the projection T. being provided with a screw thread.

For the further purpose of holding the screw C. in position I use a nut D. In removing the knives the nut D. is loosened, and the pressure of the screw C. is taken from the stop E., which allows the plate B to be driven backward so as to disconnect with the projections L. L. which pass through orifices in the plate B as well as through orifices in the knives. The knives are provided with small holes, shown by O., for the purpose of enabling the operator to use a punch in driving the knives laterally upon the cutter bar, so that the projection L. will pass from the small portion S' to the larger portion S. of the aperture in the knives, thereby allowing the knife to be lifted from the cutter bar. These holes O. O. however, may be dispensed with, as the knives may be removed without the aid of such holes. It will be observed that each knife bears against the adjoining knife, and that the whole are thus bound together upon the cutter bar in a substantial manner. Each knife, therefore, serves as a brace for the knives adjoining it, and they brace each other in a very secure and stable manner upon the cutter bar.

I am aware that it has heretofore been proposed to provide cutter bars with headed bolts and pins with beveled edges fitting elongated slots having reduced portions adapted to secure the cutters in place, but in such pre-

vious constructions the lateral pressure and torsional strain upon the cutters soon loosens the connections, permitting the blade to be warped and the bolts and pins to be easily  
 5 wrenched loose and broken off. It has also been proposed to provide a cutter bar with square headed lugs having an undercut at one side so as to form a recess adapted to receive a lip or flange projecting from the lower  
 10 edge of a rectangular opening in the cutting blade, but this latter construction is objectionable on account of the readiness with which the undercut portions or recesses in the lugs are filled with dirt and gravel, thereby  
 15 rendering it difficult to adjust the cutters and fix them upon the cutter bar.

One of the principal objects of my invention is to overcome these several objections to previous methods of securing cutter blades in position upon the bar, and at the same time adapt them to be easily removed and replaced, and to this end I have devised means by which a rigid and substantial connection is made between the blade and cutter bar,  
 25 whereby the cutters are firmly held to their seats and braced together in the section, while at the same time they are capable of being readily removed and replaced. These results are accomplished by forming the cutters with  
 30 rectangular openings near their abutting edges, the sides of such openings being beveled inwardly about one half of the length of the rectangle, as clearly shown in Fig. 3, so as to form ledges *s*; and the cutter bar is  
 35 formed integrally with the right-angled lugs or projections *L*, the sides of which, running parallel with the longer sides of the rectangular openings in the cutters, are beveled outwardly, as shown at *l* in Fig. 2, so as to fit  
 40 over and rest upon the ledges *s*, with the top of the lug flush with the upper surface of the cutter bar, whereby a wedge-like connection and extended bearing surface is provided between the cutter bar and cutter, and the latter  
 45 is braced and supported against lateral pressure and firmly bound to its seat by the wedging action between the beveled heads of the lugs and the reversely beveled ledges, whereby the cutters are adapted to resist torsional and lateral strain which tends to warp  
 50 the blades, while the lugs are prevented from being wrenched and broken off. The projections upon the cutter bar project upward substantially flush with the upper surface of the  
 55 knives, but never beyond, thus leaving a perfectly level upper surface from one end of the cutter bar to the other.

In the knives which are placed beneath the base plate *B* on the cutter head one of the  
 60 openings may be rectangular, for the reason that the plate *B* is drawn down by the dove-tail form of the other opening and the projection, so as to securely clasp these knives between the cutter bar and the said plate.

65 The cutter bar constructed as above described can be applied to a reaper or mower in the ordinary manner, and as I make no

claim upon the method of attachment it will be unnecessary to describe such attachment in detail.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent is—

1. The combination with a cutter bar *A* having a flange or lug *T* at one end portion and provided with a series of dove tailed projections *L*, of the knives *K* having openings provided with flaring or beveled edges engaging the dove tailed projections, a cutter head *P* having a base plate *B* provided with a stop *E*,  
 75 and a set screw *C* engaging the flange or lug and bearing against the stop on the base plate of the cutter head for moving the latter longitudinally, substantially as described.

2. The combination of a cutter head *P* having a base plate *B* provided with orifices and an end stop *E*, the cutter bar *A* having a series of dove tailed projections *L*, the knives *K* having orifices provided with flaring or beveled edges engaging the dove tailed projections, and devices for moving the cutter head and its base plate longitudinally, substantially as described.

3. The combination with a cutter bar provided with dove tailed projections, of knives having openings provided with flaring or beveled edges engaging the dove tailed projections, a cutter head having a base plate provided with a stop, a binding plate arranged between the stop and the nearest knife, and  
 95 mechanism for moving the cutter head and its base plate along the cutter bar, substantially as described.

4. The combination with a cutter bar having a flange or lug at one end portion and provided with a series of dove tailed projections, of knives having openings provided with flaring or beveled edges engaging the dove tailed projections, a cutter head having a base plate provided with a stop, a binding plate arranged between the said stop and the nearest knife,  
 105 and a set screw engaging the flange or lug on the cutter bar and bearing against the stop on the base plate of the cutter head for moving the latter longitudinally, substantially as described.

5. The combination of a cutter bar provided with dove tailed projections, a series of knives provided with openings having flaring or beveled edges engaging the dove tailed projections, a cutter head provided with a stop *E*, a binding plate *W* arranged between the said stop and the nearest knife, and a screw bolt *C* engaging a threaded part of the cutter bar and adapted to hold the head in position to  
 120 bind the knives on the cutter bar, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

JOHN J. ELLSWORTH. [L. S.]

Witnesses:

WILLIAM KELLY,  
 M. McLAREN.