J. Woodruff,
Mower.

No. 28625

Patented June 5. 1860.

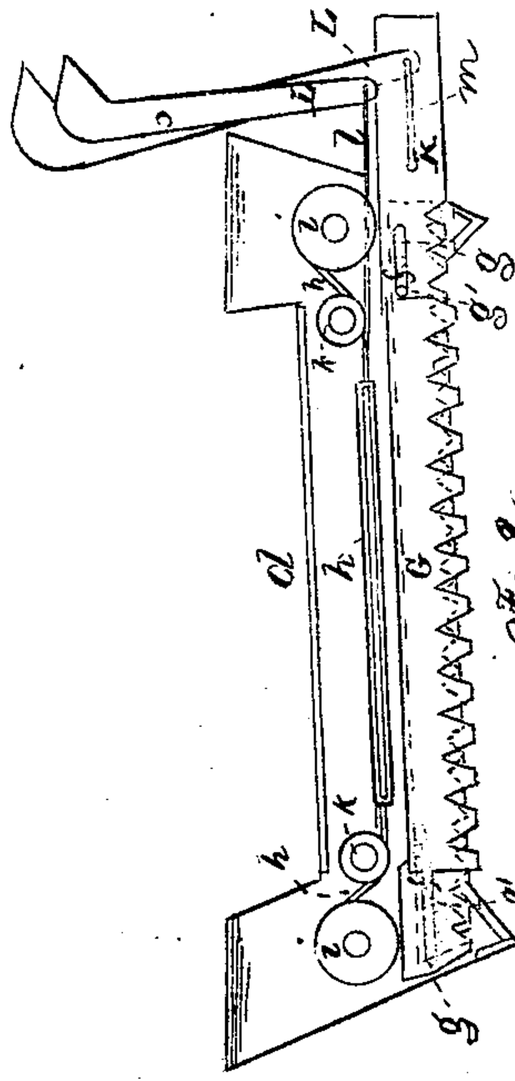
Fig. 2.


Fig 3.

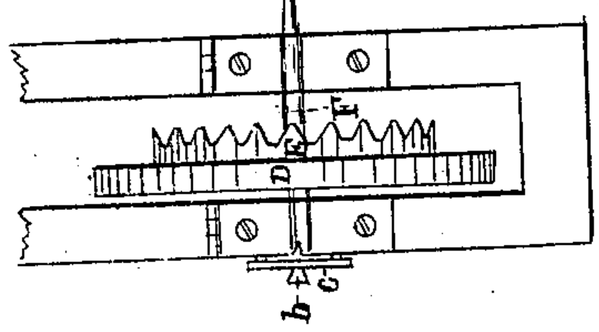
Fig. 4.

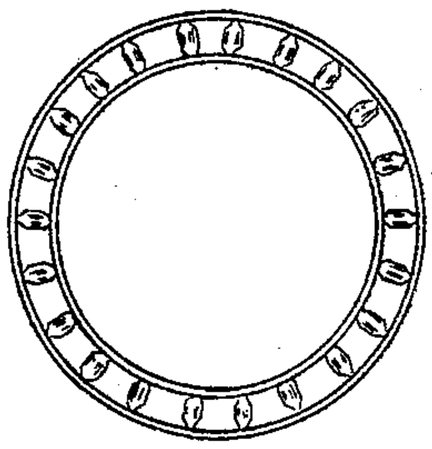
Fig. 5.

Fig. 1.

Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH WOODRUFF, OF RAHWAY, NEW JERSEY.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **28,625**, dated June 5, 1860.

To all whom it may concern:

Be it known that I, JOSEPH WOODRUFF, of Rahway, in the county of Union, and State of New Jersey, have invented certain new and useful Improvements in Harvesters; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the drawings similar characters refer to like parts.

Figure 1 is a general view in perspective. Fig. 2 is a plan view of the cutter-bar, &c., with the cover of the knives, &c., removed. Fig. 3 is a front view, showing the curve of cutter-bar. Fig. 4 represents the mode of preventing friction of the main shaft. Fig. 5 shows wheel without cogs for driving the operating-levers.

To enable those skilled in the art to make and use my invention, I will describe its construction and operation.

A is the frame-work, which is composed of three pieces of wood of suitable size and shape; B, the wheel-frame; C, the seat-platform, which is hinged to the wheel-frame at a point near the axle of driving-wheel D. This wheel D has on its inner face a beveled cog-wheel, E, which drives the operating-levers. The frame A is bolted to wheel-frame B by two bolts, *a*.

It will be seen (Fig. 4) that instead of using an anti-friction washer to relieve the end-thrust of the axle F of wheel D, I use a conical center, *b*, which has a screw cut on it, and, passing through a female screw in plate *c*, is readily adjustable.

G is the guard or cutter-bar. In making this cutter-bar, I take a piece of sheet-steel (or other suitable material) and stamp in it diamond-shaped holes. I then lap the outer edge of this piece of metal, bending it across them, leaving a sufficient space between the two folds to allow the passage of the knives. The inner edge, *d*, of this piece is then bent up, forming a catch to retain plate or cover H. This plate is also formed of a piece of sheet metal, and is kept in the required position by being forced under the upper fold of the guard (which operates as a spring) and under the lapped points *e* of the guard and inside of the rim *d*. This bar G is then bent on a true curve, as shown in Fig. 3. I thus curve the guard or bar G, in order that the flexible knife operated from each end may press closely down upon the stationary knife I. (See dotted lines, Fig. 2.) This knife is held in position simply by pins *f*.

Instead of making use of stationary knife, I may sharpen the lower edge of the guard, making it serve as a cutter.

K is the flexible knife, made of a thin saw-like blade.

The advantage in using knife or blade I is its facility of removal and repair.

Flexible knife K has at each end slots *g* working over pins *g'*, for the purpose of keeping in its proper position. At or near each end of this knife is attached a cord or belt, *h*, which passes over and under pulleys *i* and *k*.

L and L′ are the operating-levers, pivoted to the wheel-frame. They may be pivoted to an adjustable lever. One of these levers, L, is attached to the pulley-cord *h* by a small cord, *l*. The other lever, L′, is attached to the knife by a small cord, *m*. M is a spring attached by a cord, *n*, to the knife for operating one end of the same. It is better for levers L and L′ to work on a knife-edge pivot.

The bolt *o* is to regulate the tension of the spring M; N and N′, a lever and dog for raising or lowering the cutter-bar.

It will be seen that the angle included between the cutting-edge and line of draft, instead of being a right angle, (as is customary,) is an obtuse angle. It will also be seen that inasmuch as a line drawn through the centers of the wheels D and P is parallel to the cutter-bar, and hence (since the wheels have equal diameters) the operating of the raising-lever N will equally elevate each end of the cutter-bar.

Q is a small wheel to support the platform C, to which the shafts are attached by the rod *p*.

In operating my invention, motion being communicated, the wheel E operating the levers L and L′ makes them, by means of the pulleys and cords, draw first one end and then the other of the knife K. The drawing of the knife from each end over the curved cutter-bar, and from points below any point in the curve, prevents the buckling of the knife and makes it at all points press closely to the cutter-bar, thus giving to the knife at all times as it reciprocates a shear cut, which is so greatly desired in a knife for harvesters, and also at the same time diminishes friction.

It will be seen that as my knife is very light and flexible very little power, as compared with other similar machines, is needed to operate it.

In order to change my harvester from a mower to a reaper it is only necessary to hang on a platform in the ordinary manner and place the elevating-lever N in a higher notch of the dog N, so as to raise the cutter-bar higher.

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

The arrangement of the levers L L′, pulleys *i* and *k*, and cords *h*, *l*, and *m*, for operating the reciprocating curved knife, as and for the purposes set forth and described.

JOSEPH WOODRUFF.

Witnesses:
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