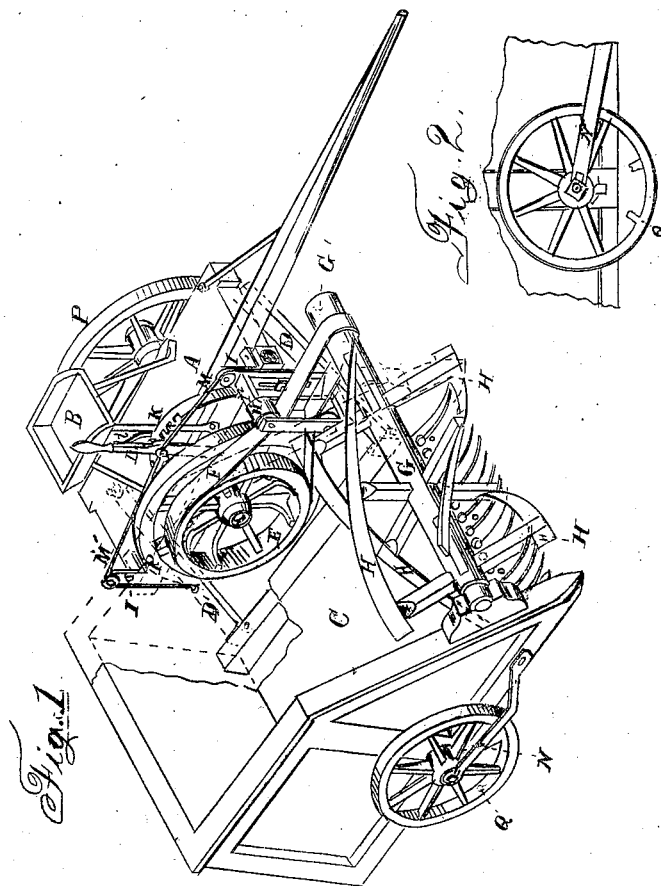


*E. Kramer,  
Clover Harvester.*

*No. 54370*

*Patented May 1, 1866.*



WITNESSES.

L. Murphy  
Henry R. Seeds

*Elias Kramer*  
*by*

*O P McIlwray & Co*  
*his attorneys-*

# UNITED STATES PATENT OFFICE.

ELIAS KRAMER, OF ALVIRA, PENNSYLVANIA.

## IMPROVEMENT IN CLOVER-HARVESTERS.

Specification forming part of Letters Patent No. 54,370, dated May 1, 1866.

*To all whom it may concern:*

Be it known that I, ELIAS KRAMER, of Alvira, in the county of Union and State of Pennsylvania, have invented a new and useful Machine for Gathering the Heads of Clover; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, made part of this specification.

The drawing is an isometrical projection, in which portions of the box are represented as broken away for the purpose of showing the structure of the machine. Such portions are indicated by dotted lines, as are also parts of the machine which would be concealed by other parts.

A is a frame, to which the tongue is attached, and which is supported by two wheels, P and P'. On this frame is supported the driver's seat B, as shown.

C is a box to carry the heads after being gathered. This box is supported on the outside by a wheel adjustably united to the side of the box by the slotted plate shown in Fig. 2 and the slotted brace N, by means of which the height of the box is arranged at will. This brace also serves the purpose of a guard for preventing the wheel Q becoming entangled in the clover.

The box is united to the main frame and supported upon the side next to the frame by the braces D and D'. These braces are hinged to the frame and also to the box, so as to permit such freedom of vertical motion as may be required by irregularities in the surface of the ground, as well as in adjusting the height of the cutting apparatus in conjunction with the adjustable wheel Q. These braces are controlled by the lever L, through the cords or chains M and M', which pass over pulleys on the standards I and I'. When the lever is thrown back the brace D at the forward end of the box is raised, and it is lowered by throwing the lever forward. The lever works in conjunction with the notched arch K, and is retained in the notches by stress of the spring L'.

To the wheel P is attached the pulley E, over which passes the band F, driving the pulley G' and communicating motion to the shaft G and reel-arms H.

The frame I<sup>2</sup>, which is adjustably united to

the standard I, restrains the lateral movements of the belt and confines it to the pulley E. This frame also supports the friction-pulleys H', over and under which the belt runs.

The pulley G' is made with a wide face, to permit perfect freedom in the play of the machine in adapting itself to irregularities of the ground.

The shaft G carries the spirally-arranged shears H H, which are made of metal, and are intended to operate in conjunction with the fingers O in cutting the heads of clover. These fingers O are shaped as represented. They are sharpened at the point, so as to penetrate readily the clover, and gradually widen toward the base. At the base circular openings smaller than the heads to be gathered receive the stalk. The heads are either pulled off in the motion of the machine or are sheared away by the action of the revolving shears H H. The stalks, leaves, and other portions of the clover passing through these circular openings are not disturbed, the heads alone being removed and thrown back into the body of the box.

The shears H are made of sheets of metal having square edges, and are carried back on the arms of the reel, so that they shall, by the revolution of the reel, press back the heads into the box.

The fingers O are curved on their upper faces to conform to the curve of a cylinder described by the revolution of the reel, and they are so arranged in relation to the spiral shears as that the shears shall operate against the sides as well as the bases of the fingers.

The spiral shears, in revolving, are so adjusted as that they shall begin to cut the heads only when they have passed so far between the fingers as that the heads, when severed, will not have space to fall between the fingers.

Having fully described the nature of my improvements, what I claim as my invention, and seek to secure by Letters Patent, is—

1. The spirally-arranged revolving shears H H, in combination with the fingers O, when curved on their upper faces and having openings at their bases, substantially in the manner and for the purpose set forth.

2. In combination with the wheel Q, adjustably attached to the box C, so as to regulate

the height of the cut on the outer side, the brace and guard N, when adjustably attached to the axle of the wheel Q by a slot and nut, substantially as and for the purpose set forth.

3. In combination with the braces D and D', hinged as described, the cords M and M' and hand-lever L, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELIAS KRAMER.

Witnesses:

BENJAMIN BREON,  
DAVID ARTMAN.