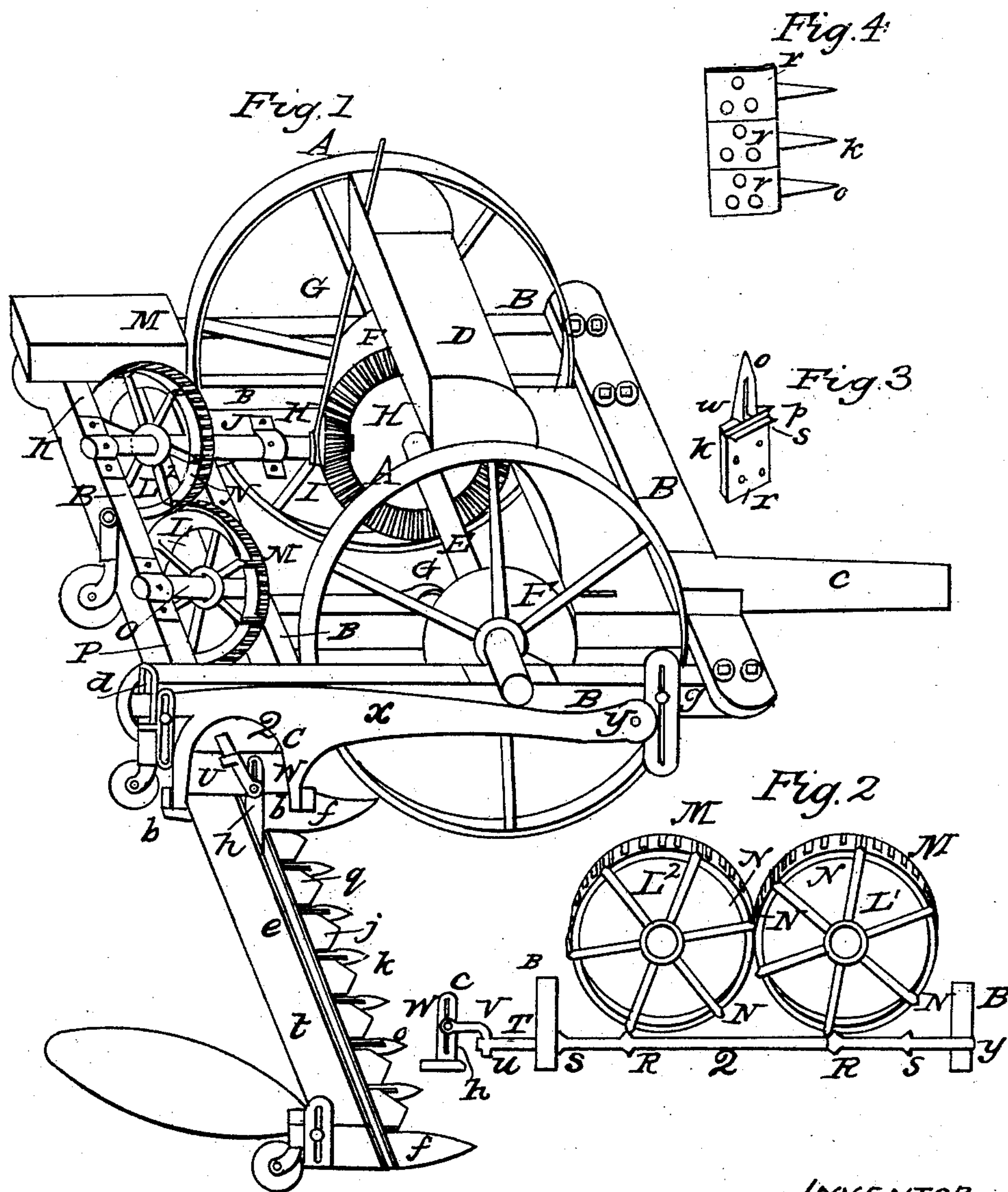


J. LONG.
Mowing Machine.

No. 18,981.

Patented Dec. 29, 1857.



INVENTOR
John Long.

WITNESSES
L B Myers
Harvey

UNITED STATES PATENT OFFICE.

JOHN LONG, OF MASSILLON, OHIO.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **18,981**, dated December 29, 1857.

To all whom it may concern:

Be it known that I, JOHN LONG, of Massillon, in the county of Stark, in the State of Ohio, have invented certain new and useful Improvements in Reaping and Mowing Machines; 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.

My invention consists in certain novel improvements in giving to the knife-bar the vibratory motion.

Figure 1 is a view in perspective. Fig. 2 is a sectional view of the novel device for imparting to the knife-bar the vibratory motion. Fig. 3 is a top view of a guard, and Fig. 4 a bottom view of three guards of the finger-bar.

Similar letters of reference indicate corresponding parts in the several figures.

A are the ground-wheels; B, the frame; C, the tongue or pole; D, the driver's seat; E, the axle; F, ratchet-wheels secured on the axle, one at each ground-wheel A; G, the pawls of the ratchet-wheels, secured at the one end to a spoke of the ground-wheels A; H, the beveled master-wheel, secured on the axle E near the left ground-wheel A; I, the beveled pinion-wheel meshing in the beveled master-wheel H; J, the pinion-shaft working in bearings K. L' L² are two complex spur-wheels. They are alike in size, and have the same number of regular teeth M common to simple spur-wheels, and the same number of sectional teeth N, which are placed at equal distances apart on both. One is secured on the hind end of pinion-shaft J, the other on a separate shaft, O, working in two bearings, P. They mesh with each other by the regular teeth M, so as to bring the sectional teeth of the one, as both are moved round, at a point exactly half-way between two sectional teeth of the other, as shown in Figs. 1 and 2, and vice versa.

R are two circular teeth on shaft Q. The one meshes with the sectional teeth N of the one complex spur-wheel and the other with the sectional teeth of the other complex wheel. Shaft Q slides in two bearings, T, and is provided with two stop-collars, S, one near each end, to arrest its motion, and with a swivel-joint, U, for allowing it to be turned round to wear circular teeth R equally; also with a longitudinal slot, V, at the one end, which couples by a transverse bolt, W, with the longitudinal

slot *h* of the standard *c* of the knife-bar *g* in such a manner as will allow the knife-bar to operate alike in any position the finger-bar *e* may adjust itself in passing over the inequalities of the ground, whether parallel or raised, or lowered at an angle of forty degrees. I prefer to provide the reciprocating shaft Q with stop-collars S and swivel-joint U; but a shaft without either stop-collars or swivel-joint may be used and answer every purpose.

H is the hinge-bar, attached to the inner shoe, *f*, of the finger-bar *e* by two hinge-joints, *b*, allowing the outside end of the finger-bar to rise or lower, as necessary to adapt itself to the inequalities of the ground, as well as allow the finger-bar to be raised and turned over on the machine in passing by stumps or through narrow passages. At the front end it is attached to the side of the frame B by upright slot and set-bolt *z*, and may thereby be set at a point higher up or lower down to raise or lower the guards or front side of finger-bar *e*.

Y is a hinge-joint allowing the back end to slide up and down in the stationary upright slot *d* as the inequalities of the ground raise or lower the inner end of the finger-bar *e*.

j are the knives secured on the knife-bar in sections.

k are the guards of the finger-bar *e*.

o is the point of the guards.

r is the base, which is made quadrangular, slightly longer than the width of both the cutter and finger bars, and exactly as wide as the distance between the guards from center to center.

s is a transverse upright flange, the top of which is on a line with the upper surface of the finger-bar *e*.

p is a square transverse groove.

q is the knife-slot.

The guards are fastened to the timber *t* of the finger-bar *e* by wood-screws. Each base of the guards form a section, and all of them the entire bottom of the finger-bar, and each groove in the base a section, and all of them a complete groove for the knife-bar, and an edge, *u*, between the guards for the knives to rest on as they play to and fro.

Operation: Suppose the machine moving forward and the shaft Q to be in the position to the complex spur-wheels L' L² as shown in Fig. 2. Spur-wheel L', meshing with vibratory shaft Q, moves the shaft in the direction it re-

volves exactly half the distance its sectional teeth N are apart, where spur-wheel L^2 meshes with the shaft Q and moves the shaft the same distance back again to the point where spur-wheel L' meshes with the shaft, and so on the complex spur-wheels thus mesh alternately with the vibratory shaft and impart to the knife-bar a quick, regular vibratory motion.

I am aware that cranks and cam-wheels have been used in mowers and reapers for driving the vibratory knife-bar, and, being old devices, do therefore not claim them; but

What I claim is—

Giving the cutter-bar g the vibratory motion by two complex spur-wheels, L' L^2 , in combination with the reciprocating and rotating shaft Q , the whole being constructed and arranged in the manner and for the purpose set forth.

JOHN LONG.

Witnesses:

L. B. MYER,
W. A. MYER.