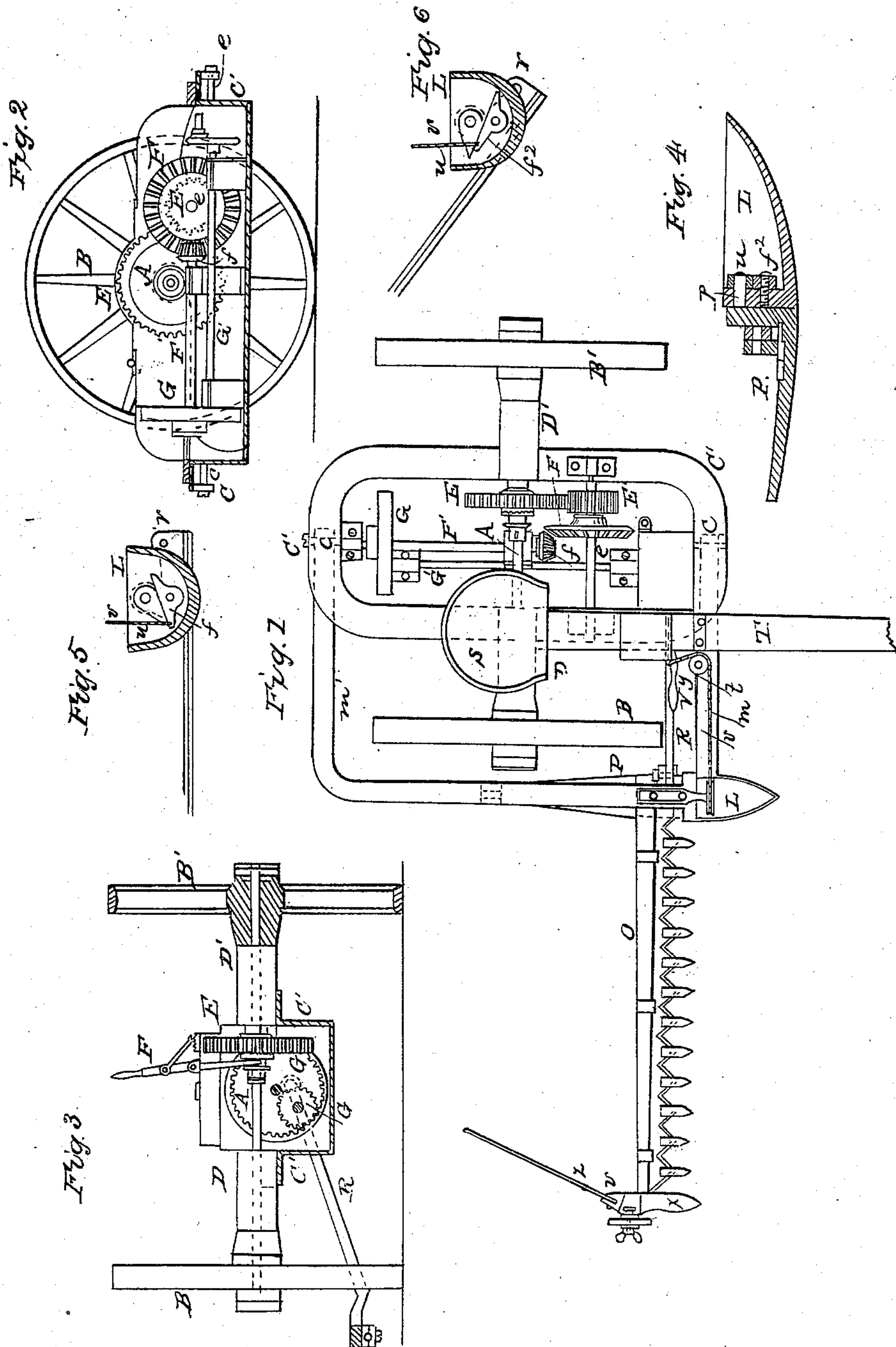


COOLMAN & YOUNG.

Harvester.

No. 88,453.

Patented March 30, 1869.



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IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **88,453**, dated March 30, 1869.

To all whom it may concern:

Be it known that we, GRANT T. COOLMAN and CHARLES M. YOUNG, both of Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Harvesters, of which the following is a full, clear, and exact description.

First. The object of the first part of our invention is so to arrange the inner shoe that it shall mark a continuous track, whether the finger-beam is raised or not, and yet leave the finger-beam free to rise or fall at either end, (to conform to inequalities of the surface over which it slides,) independently of the other, and without affecting the movements of the main or gearing frame; and our improvement consists in a novel method of combining with a harvester, substantially as hereinafter specified, a U-shaped frame embracing the inner driving-wheel, pivoted at its ends to the main frame in front and rear of the driving-wheel, having a shoe rigidly secured to its outer front corner, and a laterally-projecting cutting apparatus pivoted to play vertically at a right angle to the shoe.

Second. The object of the next part of our invention is to allow the finger-beam to conform freely to inequalities of the surface over which it slides, and to rise and fall freely at either end independently of the other, or at both ends, without affecting the movements of the main frame, and yet secure a strong connection; and our improvement consists in a novel method, hereinafter described, of combining with a rigid U-shaped coupling-frame, pivoted to play vertically both in front and rear of the wheels, a fixed shoe secured to its outer front corner, and a cutting apparatus secured at one end only to a long rocking brace-bar parallel with the face of the driving-wheel, and pivoted in front in the shoe and in rear to the coupling-frame, with both pivots in nearly the same horizontal frame, and so arranged as always to remain parallel with the crank-shaft.

Third. The object of the next part of our invention is to enable the driver to raise either end of the cutting apparatus independently of the other, or to lift the entire cutting apparatus bodily; and our improvement consists in a novel method, hereinafter described, of combining with a vibrating coupling-frame

a finger-beam, hinged to this frame at its heel end by a joint parallel with the line of motion of the machine, and carrying a stud secured upon and turning with the pivot of the finger-beam, and a locking-lever, which, when vibrated by the driver, bears against the stud and lifts first the divider end of the cutting apparatus, and then the entire cutting apparatus, to pass over obstructions or from field to field.

Fourth. The object of the next part of our invention is to protect the devices for locking and lifting the cutting apparatus from becoming clogged; and our improvement consists in a novel method of combining a vertically-vibrating coupling-frame, a fixed shoe, and a finger-beam hinged to the shoe with locking lifting devices inclosed within the shoe.

Fifth. The object of the next part of our invention is to have a compact arrangement of the gearing, while securing greater speed than usual, by the use of a triple-gear driving-mechanism instead of the usual double-gear mechanism; and our improvement consists in a novel method of combining a spur-wheel on the main axle, a spur-pinion on a counter-shaft parallel with said axle, a bevel-wheel on the counter-shaft, driving a shaft at right angles to the main axle, and carrying an internal spur-wheel, driving a crank-shaft longer than the diameter of the driving-wheels, and driving the cutters by a crank and pitman, as hereinafter more fully described.

Sixth. The object of the next part of our invention is to bring the pitman as nearly in line with the cutting apparatus as is consistent with clearing the cut crop; and our improvement consists in arranging the second shaft at a lower level than the main axle, and the crank-shaft below the one preceding it, as hereinafter described, so that the pitman may be brought down to the proper level.

In the accompanying drawing we have shown all our improvements as embodied in one machine. It is, however, obvious that different parts of our invention may be applied to many of the organized harvesters of the present day.

Figure 1 is a plan or top view of our improved harvester. Fig. 2 is a vertical longitudinal section through the machine. Fig. 3 is a view, partly in elevation and partly in sec-

tion, of a portion of the machine as seen from the front. Fig. 4 is a vertical longitudinal section through the inner shoe and coupling-brace. Fig. 5 is a vertical transverse section through the shoe, showing the finger-beam parallel with the ground; and Fig. 6, a similar view of the same, with the divider end of the finger-beam elevated.

In this instance we have shown a main axle, A, Figs. 1 and 2, carrying two driving-wheels, B B', turning loosely on the axle, with which they are connected by backing-ratchets of well-known construction. (See Fig. 3.)

The gearing is supported by and inclosed in a trough-shaped cast-metal casing, C, provided with a projecting flange, C'. Pipe-boxes D D', cast on the flange of this frame, form bearings for the main axle A.

The lower halves of the bearings of all the shafts which carry the gearing are cast in one piece with this frame or trough C, and thus require no adjustment to secure them in their proper places.

A spur-wheel, E, turns loosely on the main axle, with which it is connected by a sliding clutch and feather in the usual way. This spur-wheel drives a corresponding pinion, E', on a counter-shaft, e, in front of, parallel with, and slightly below the main axle, as shown in Fig. 4.

A bevel-wheel, F, on the counter-shaft drives a corresponding pinion, f, on a shaft, F', arranged transversely beneath the main axle, and carrying an internally-gear'd spur-wheel, G, which drives a small spur-pinion on a crank-shaft, G', which extends forward to the front of the frame at a still lower level than any of the other shafts.

A balance-wheel on the forward end of the crank-shaft drives the cutters in the usual way by a crank and pitman, R.

It will be observed that the gearing (balance-wheel and all) is entirely inclosed within the casing, and the pitman plays through a slot in the side of the casing.

Our machine, it will be observed, is triple-gear'd, which enables us to give a high speed to our cutters. We do not, however, claim the triple gearing broadly.

By placing the second shaft, F', below the main axle, and the crank-axle below the second shaft, we can bring the crank as nearly in line with the cutter-bar as is consistent with clearing the cut crop and keep the main frame always horizontal.

The tongue T is rigidly fastened to the inner flange of the casing C, and a seat, S, for the driver is mounted on a spring-standard secured on the tongue.

A three-sided or U-shaped coupling-frame, m, is hinged to play freely vertically on pivots c, near the middle of the trough. A shoe, L, by preference made hollow, is secured to

the inner front corner of this coupling-frame. A finger-beam, O, provided with suitable guards and cutters, is secured to a long brace, P, pivoted at its rear end in a lug underneath the coupling-frame. The front end of this brace carries a pivot, p, which passes through the back of the shoe, and has a stud, u, of the form shown in Figs. 8 and 9, fixed thereon. The finger-beam is thus free to rise and fall at either end, and is securely braced.

To lift the divider end of the finger-beam, we pivot a rocking lever or lifting-latch, f², in the shoe beneath the stud u, and connect one of its ends with a lifting-lever, V, on the main frame by means of a cord, v, passing over a pulley on the coupling-frame and another pulley on the tongue.

When the driver first draws on the lifting-cord the lever f² strikes the toe of the stud u and lifts the divider end of the finger-beam, as shown in Fig. 10. A continuance of this lifting motion lifts the coupling-frame and the heel end of the finger-beam. The outer end of the finger-beam is provided with a suitable divider, track-clearer, and grain-wheel.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, in a harvester, of two main wheels, a main frame carrying the gearing, a coupling-frame such as described, and a shoe secured to the coupling-frame with the finger-beam, pivoted to but turning independently of the shoe, as set forth.

2. The combination, with the three-sided coupling-frame and its fixed shoe, of the finger-beam secured to the long rocking brace-bar, having one pivot in the shoe and the other in the coupling-frame, but both on the same level, as set forth.

3. The combination, substantially as set forth, of the finger-beam, stud u, lifting-lever f², for the purpose specified.

4. The combination, substantially as set forth, of the coupling-frame, shoe, and hinged finger-beam with locking lifting devices inclosed within the shoe.

5. The combination of the main axle, the counter-shaft, the second shaft, F', and the long crank-shaft with their respective gears, when arranged and operating as described, for driving the cutters.

6. The arrangement of the second shaft, F', below the main axle, and the crank-shaft below the shaft F', as and for the purpose described.

In testimony whereof we have hereunto subscribed our names.

GRANT T. COOLMAN.
CHARLES M. YOUNG.

Witnesses:

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J. S. FISK.