J. F. SEIBERLING.

Harvester Gearing.

No. 168,930. Patented Oct. 19, 1875.

Fig 1.

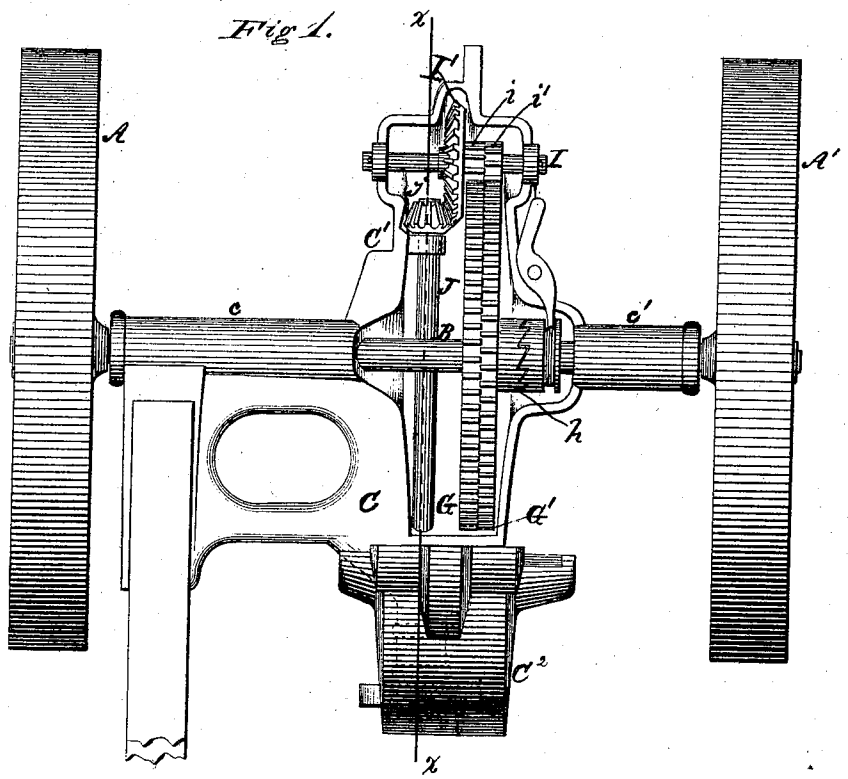
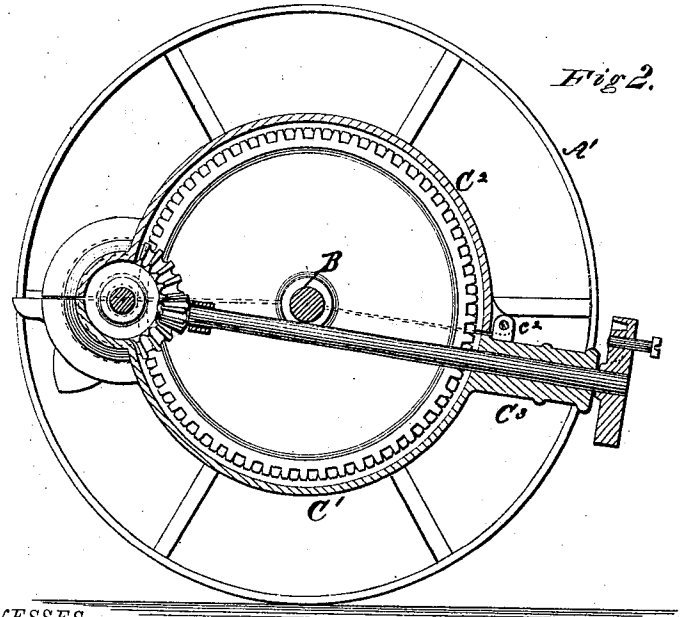


Fig 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN F. SEIBERLING, OF AKRON, OHIO.

IMPROVEMENT IN HARVESTER-GEARINGS.

Specification forming part of Letters Patent No. **168,930**, dated October 19, 1875; application filed April 7, 1874.

To all whom it may concern:

Be it known that I, JOHN F. SEIBERLING, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Harvester-Gearing, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, and in which—

Figure 1 is a plan view of so much of a harvester to which my improvement is applied as is necessary to illustrate the invention hereinafter claimed, the cover of the gear-casing being lifted to show the gearing. Fig. 2 represents a vertical section through the machine, on the line *x x* of Fig. 1.

The invention herein claimed relates to the gearing of a harvester; and its object is to diminish the number of wheels and journals heretofore deemed necessary to obtain the requisite rapidity of reciprocation of the cutters, as well as to lessen the space occupied by the gearing and its inclosing casing. The subject-matter claimed is hereinafter specified.

Two driving-wheels, A A′, are mounted loosely on an axle, B, with which they are connected by suitable backing-ratchets. This axle turns freely in boxes *c* c^1, forming part of a cast-iron main frame, C, of such shape as to form part of a trough-shaped casing, C^1, in which that part of the gearing below the axle is inclosed, its upper part being likewise protected by a cover, C^2, hinged at c^2, so as to allow it to be lifted when required. Two spur-wheels, G G′, of equal diameter, are arranged side by side on and turn with the main axle B, but with the teeth of one wheel opposite the spaces between the teeth of the other, as shown, instead of having the teeth in parallel planes transverse to the face of the wheel, as has heretofore been usual in this class of gearing. These wheels, in fact, constitute but one gear, being secured together or cast in one piece, and they are mounted loosely on the axle, to which they are locked, when desired, by a clutch, *h*, of well-known form, provided with a suitable shipping-lever. These spur-wheels gear into corresponding pinions *i i′*, likewise constituting one gear only, and mounted loosely on a fixed axle, I, mounted in the casing C^1, and carrying a bevel-wheel, I′, which turns loosely on the axle with these pinions, and drives a corresponding pinion, *j*, on a crank-shaft, J, which is also mounted in bearings in the casing C^1, projects through a tubular boss, C^3, on the front of the main frame, and drives the cutters by a crank and pitman.

This arrangement of gearing works very steadily, with apparently no backlash, and very little noise; it requires much less power than ordinary gearing with a single set of teeth and the same pitch; it permits the gearing to be greatly reduced in size, so that it can easily be inclosed in a case of practicable size, and still retain the proper motion, without the necessity of adding another set of gears to reduce the size of the wheels, as has been the case heretofore in inclosed-gear machines having ordinary gearing.

It will be observed that this gearing operates on the same principle as a gear with a single set of teeth, the teeth being only one-half the size of their pitch, which has the effect of causing the resistance of the teeth at the pitch-line to be produced more directly on a line between the center of the wheel and pinion, thus causing more direct leverage on the pinion, thereby permitting the same to be much smaller than in ordinary gearing of a single set of teeth.

It will be seen that by reducing the pinion, the large wheel can be correspondingly reduced, and thus contract the size of the gearing in a double-geared machine, so that it can be inclosed in a small case, and save the extra expense, complication, wear, weight, and heavy draft of a triple gear, while obtaining the same speed.

As the driving-wheel of a harvester seldom exceeds thirty-two inches in diameter, the distance between the axis of the driving-shaft and the ground is only about sixteen inches. When the diameter of the driving-shaft and the distance which the gear-casing must run above the surface of the ground to avoid obstructions is deducted, there is practically only about twelve inches left for the diameter of the gear-casing.

By my invention I am enabled to reduce the diameter of the gears so much as to dispense with one shaft and its bearings and two gears, thus diminishing the complexity, cost,

friction, and wear of the gearing. I have also found, in practice, that I can use a pinion with a less number of teeth than has heretofore been deemed practicable in harvester-gearing.

I am also enabled to use a gear-casing of less than one-half the diameter of the driving-wheel, and still attain the requisite speed of the cutters. In practice I use driving-wheels thirty inches in diameter, a spur-wheel of about twelve inches in diameter, and a bevel-wheel of about eight inches in diameter. The vertical depth required below the axle is about half the diameter of the spur-wheel.

In a harvester, I claim—

The combination of the spur-wheel, with its two sets of teeth alternately and intermittently arranged on its periphery with respect each to the other, the correspondingly-constructed spur-pinion, the bevel-wheel on the same shaft, and turning with the pinion, and the bevel-wheel on the crank-shaft, crossing the line of the main axle, these several members being arranged, as described, within the inclosing case, and operating in combination, substantially as set forth, to drive harvester-cutters.

In testimony whereof I have hereunto subscribed my name.

JOHN F. SEIBERLING.

Witnesses:

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E. C. DAVIDSON.