W. F. GOODWIN.

HARVESTER.

No. 73,424. Patented Jan. 14, 1868.

Fig. 1.

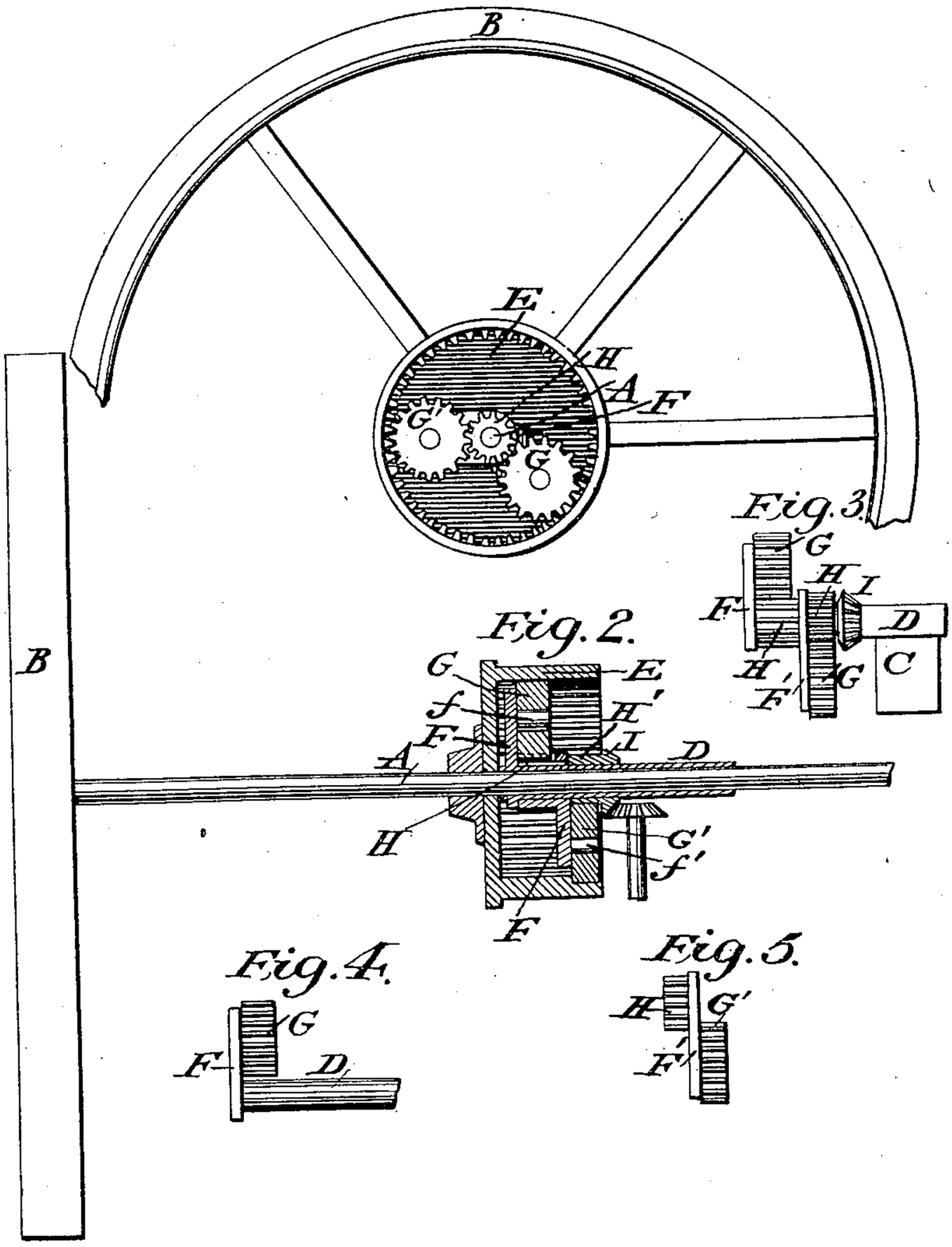

Fig. 3.

Fig. 2.

Fig. 4.

Fig. 5.

Witnesses.

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IMPROVEMENT IN HARVESTERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM F. GOODWIN, of East New York, county of Kings, and State of New York, have invented a new and useful Improvement in Harvesters or harvester-gearing; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved gearing, shown applied to the main drive-wheel axle of a harvesting-machine.

Figure 2 is a transverse section of the same.

Figure 3 is a view of the tubular sleeve, pinions, transmitting-wheel, and arms detached.

Figure 4 is a detached view of the tubular sleeve, its fixed arm, and transmitting-wheel mounted thereon; and

Figure 5 is a detached view of the secondary arm, its pinion, and transmitting-wheel.

Similar letters of reference denote corresponding parts in all the figures.

My invention consists in a novel arrangement of pinions and transmitting-wheels relative to the main or driving-axle of the machine, and within an internally-cogged drum, either revolving or stationary, whereby the required number of revolutions of the crank-shaft, which operates the cutters, is obtained, as hereinafter explained.

In the accompanying drawings, A represents the main drive-wheel axle of a harvesting-machine, and B one of the driving and carrying-wheels, mounted thereon, and connected to the axle by means of "backing-ratchets," or in any usual or desired manner. C is a tongue-plate, which, in this instance is represented as attached to or formed in one piece, with a tubular sleeve, D, mounted on the axle A, in such manner as to allow the latter to revolve freely therein. E is an internally-cogged drum or wheel, represented as keyed or otherwise firmly attached to the axle, so as to revolve therewith, but which may, if preferred, be attached to one of the driving-wheels instead of the axle. F is an arm formed upon or firmly attached to the sleeve D, and provided with a stationary stud or pivot-shaft *f*, arranged in line parallel with the main axle, upon which pin *f* is mounted a transmitting-wheel, G, arranged to mesh with the internally-cogged drum E, and with a tubular pinion, H, on sleeve D. The pinion H is mounted loosely on the sleeve D, in such manner as to turn freely thereon, and has secured to it an arm, F′, which in turn is provided with a fixed stud, carrying a second transmitting-wheel, G′, meshing with the internally-cogged drum E, and with a second tubular pinion, H′, on the tubular sleeve D. This second pinion H′ has attached to or cast with it a bevel-wheel or pinion, I, from which motion is imparted to a bevel-pinion on the crank-shaft, which drives the cutters, in a manner that will be readily understood.

In the construction described and shown, the transmitting-wheel G is held in position by the arm F, attached to sleeve D, and does not revolve around the axle, but is revolved on the stud *f*, and turning in the same direction with the drum E, causes the pinion H and its arm F′, carrying the transmitting-wheel G′, to revolve in a reverse direction to the drum. The drum being provided with (for the purpose of illustration) say forty-eight teeth, and the pinion H with twelve, four revolutions of the pinion are produced for each revolution of the drum, and the pinion and its arm, revolving in a reverse direction to the drum, and making four revolutions for each revolution of the drum, the transmitting-wheel G′ meshing with the drum, is caused to make a greater number of revolutions than could be obtained if the drum and transmitting-wheel did not revolve in opposite directions. The intermediate or transmitting-pinion G′ being in gear with the secondary pinion H′, causes said pinion to make twenty-four revolutions to one of the drum E, instead of sixteen, which would be the number of its revolutions if the drum E did not revolve around its shaft in an opposite direction to the movement of the secondary arm and its transmitting-wheel, one-third of the whole number of revolutions made by the pinion H′ being thus obtained without additional gearing; in other words, with one-third less gearing than the same number of revolutions can be obtained by any other known arrangement. Thus, when the drum has forty-eight teeth, and the pinions twelve each, the number of revolutions of the pinions for one revolution of the drum will be as follows, viz: The first pinion, H, makes four revolutions to one of the drum, while the second pinion, H′, makes twenty-four revolutions to four of pinion H, and one of the drum E. The same result

will be attained if the first arm, F, is keyed to the axle or shaft, so as to revolve therewith, while the drum is attached to the machine-frame and held stationary. In this case, the pinions H H′ and arm F′ may be mounted directly on the axle instead of on the tubular sleeve.

The sleeve, instead of being formed on the tongue-plate, may form a part of the vibrating frame which carries the cutters and crank-shaft, or said cutter-frame may be armed with sleeves, working on bearings on sleeve D, in such manner as to give to the frame or frames a concentric arrangement relative to the entire driving-gearing, thereby avoiding all possibility of cramping the gearing.

If preferred, the arms F F′ may be extended upon opposite sides of the axle, and armed with two transmitting-wheels, one upon each branch, gearing into the drum upon opposite sides, and into the common pinion H or H′, thereby giving additional strength to the structure.

The arrangement of gearing described is such as to give to the machine a compact form, rendering unnecessary any frame or framework, except such as is required to support and carry forward the cutting-apparatus and its appendages, the entire gearing being arranged upon or around and supported by a common axle. It is particularly designed for the purpose of driving the cutters, the motion being such as to adapt it peculiarly thereto, but it may be applied to any of the operations pertaining to harvesting such as operating the rake, reel, or binding-mechanism, as described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, as an improvement in harvesting-machines, is—

1. The arrangement of pinions H H′, and the transmitting-wheels on arms F F′, on and around the axle and within drum E, whereby the required number of revolutions is obtained, substantially as described.

2. The spur and bevel-pinions H H′ and I, mounted on the tubular sleeve or axle, and operated by means of the drum and transmitting-wheels, substantially as described.

3. The secondary arm F′, carrying the transmitting-wheel, gearing with the drum and secondary pinion H′, for the purpose set forth.

WM. F. GOODWIN.

Witnesses:

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N. B. SMITH.