(No Model.) 2 Sheets—Sheet 1.

A. C. LATTA.

DRIVING GEAR FOR MOWING AND REAPING MACHINES.

No. 311,132. Patented Jan. 20, 1885.

Fig. 1.

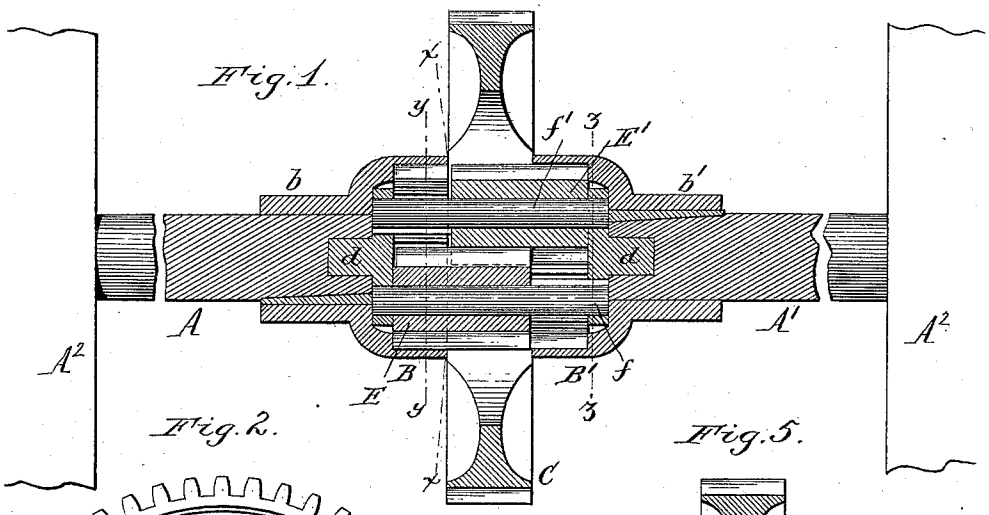


Fig. 2.

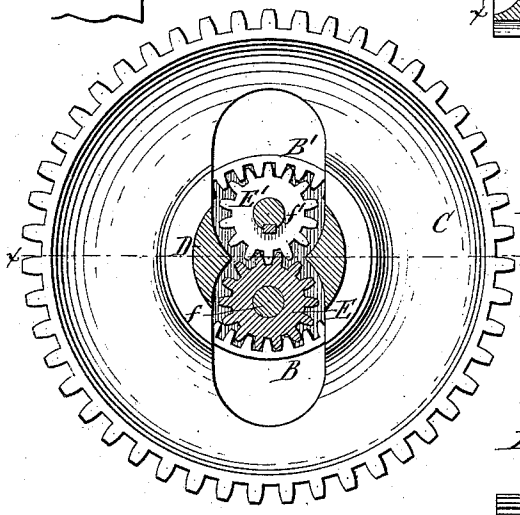


Fig. 5.

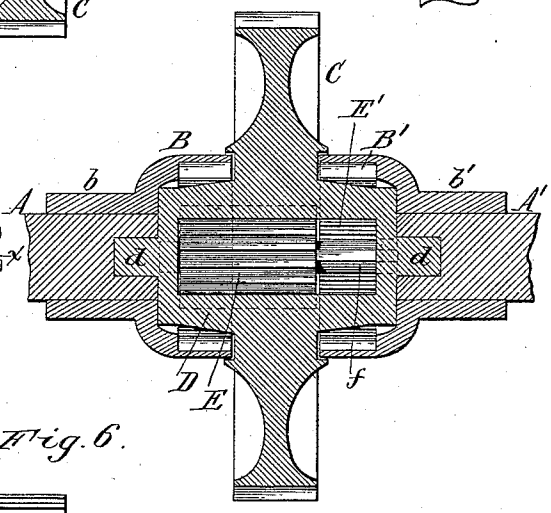


Fig. 6.

Fig. 3.

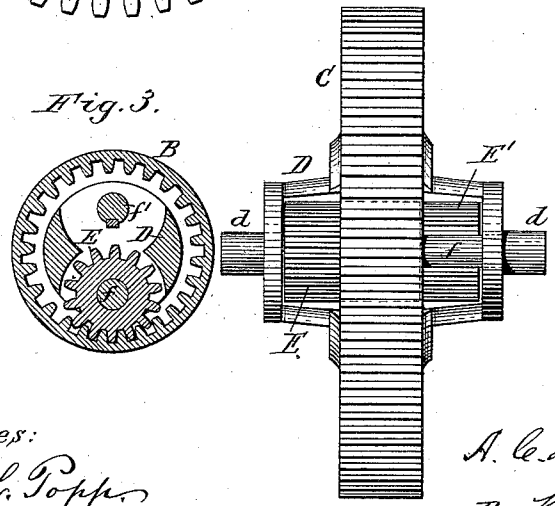
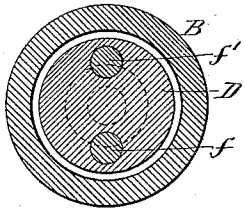


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

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DRIVING GEAR FOR MOWING AND REAPING MACHINES.

No. 311,132. Patented Jan. 20, 1885.

Fig. 8.

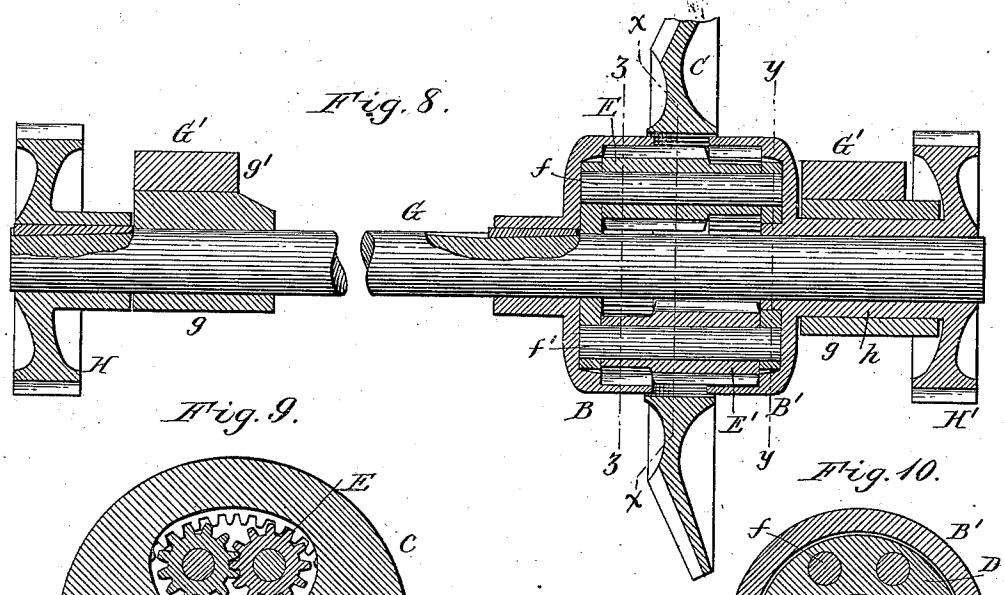


Fig. 9.

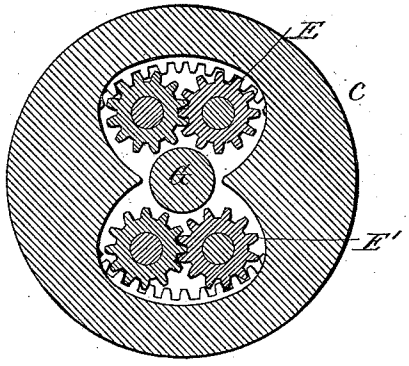


Fig. 10.

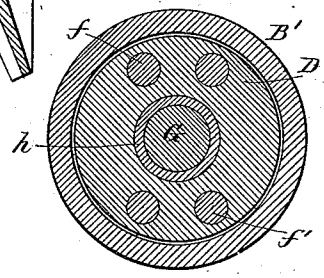


Fig. 7.

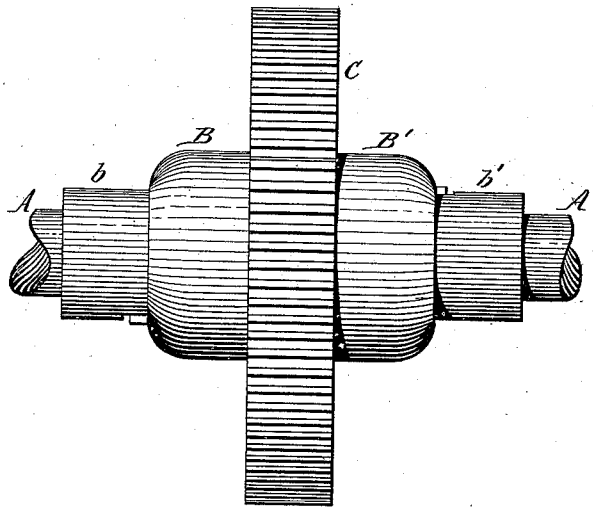
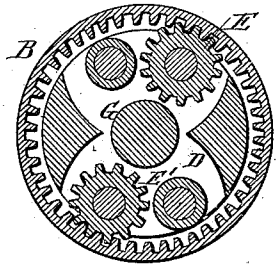


Fig. 11.



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UNITED STATES PATENT OFFICE.

ADRIAN C. LATTA, OF FRIENDSHIP, NEW YORK, ASSIGNOR OF ONE-HALF TO EMMIT G. LATTA, OF SAME PLACE.

DRIVING-GEAR FOR MOWING AND REAPING MACHINES.

SPECIFICATION forming part of Letters Patent No. 311,132, dated January 20, 1885.

Application filed November 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, ADRIAN C. LATTA, of Friendship, in the county of Allegany and State of New York, have invented new and useful Improvements in Driving-Gear for Mowing and Reaping Machines, of which the following is a specification.

This invention relates to an improvement in that class of mowing and reaping machines which are provided with two driving-wheels running upon the ground, and from which motion is transmitted to the cutter mechanism. In machines of this kind the driving-wheels are usually connected with a shaft which operates the driving mechanism by ratchet-wheels and pawls, so that one wheel can turn back or stand still when the other wheel is being turned. In this case the pawl frequently stands between two ratchets when the machine is in a position to start, and the strain of starting falls entirely upon one of the driving-wheels, while the other wheel, whose pawl is not in engagement, performs no part of the work until the play or lost motion of the pawl is taken up. In heavy work the strain so falling upon one driving-wheel causes the latter to slip upon the ground until the lost motion of the pawl of the other driving-wheel is taken up, so that the machine moves forward a short distance without actuating the cutter mechanism, whereby the knives become clogged, rendering it necessary to back up the machine for the purpose of clearing the knives and giving the machine an even start. Furthermore, the slipping of one wheel causes side draft, which is very hard on the horses.

The object of my invention is to connect the driving-wheels with the cutter mechanism in such manner that the parts will always remain in engagement, and apply the power of both driving-wheels to the cutting mechanism simultaneously at all times, and at the same time permit one wheel to turn at a greater speed than the other without causing the wheels to slip or creating side draft.

My invention consists, to these ends, of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a sectional elevation of my improved driving mechanism. Figs. 2, 3, and 4 are sectional elevations in lines *x x*, *y y*, and *z z*, Fig. 1, respectively. Fig. 5 is a sectional elevation in line *x x*, Fig. 2. Fig. 6 is an elevation of the main gear-wheel and connecting parts. Fig. 7 is an elevation of the driving mechanism. Fig. 8 is a sectional elevation of a modified construction of the driving mechanism. Figs. 9, 10, and 11 are cross-sections in lines *x x*, *y y*, and *z z*, Fig. 8, respectively.

Like letters of reference refer to like parts in the several figures.

In Figs. 1, 2, and 7, A A′ represent the inner ends of two shafts, to which the driving-wheels A^2 are rigidly secured, and which are supported in suitable boxes or bearings in the frame of the mowing or reaping machine, so as to turn therein while being held against lengthwise movement.

B B′ are two internally-toothed gear-wheels provided with hubs *b b′*, whereby these gear-wheels are rigidly secured to the inner ends of the shafts A A′.

C represents the main gear-wheel, which transmits power from the axle to the multiplying-gear, which connects with the cutter mechanism. The main gear-wheel C is arranged between the gear-wheels B B′ and concentric therewith.

D represents the hub of the wheel C, provided on opposite sides of the wheel with journals *d d*, which are seated in sockets or bearings in the inner ends of the shafts A A′, as clearly represented in Fig. 1.

E E′ represent two gear-pinions arranged within the wheel C, the hub and disk of the latter being cut out, as represented in Figs. 1 and 2, to accommodate these pinions. The inner portions of the two pinions E E′ mesh with each other, and the outer portions of the pinion E mesh with the gear-wheel B, and the outer portion of the pinion E′ meshes with the internal-gear wheel B′, while the pinion E does not extend far enough to mesh with the wheel B′, nor the pinion E′ far enough to mesh with the wheel B, as clearly shown in Fig. 1.

f f′ represent the pins on which the pinions

E E′ turn, and which are rigidly secured by keys or otherwise in the hub D of the wheel C. The internal-gear wheels B B′, with their hubs and the shafts A A′, to which they are secured, confine the pinions E E′ and the hub and inner portions of the wheel C, and retain these parts in place. When the driving-wheels and shafts A A′, and internal-gear wheels B B′, secured thereto, revolve with the same speed, the pinions E E′ are forced around with the wheels B B′, and cause the wheel C to revolve with the same speed as the driving-wheels, the parts moving in this case like a solid axle. When the machine is turned, so that one driving-wheel turns backward and the other forward with the same speed, the pinions E E′ revolve in the hub of the wheel C without moving the latter; but if one driving-wheel remains stationary and the other wheel revolves, the pinions E E′ transmit the motion to the wheel C, and rotate the latter with half the speed of the driving-wheel which is in motion. When the machine is turned as above described, it is not required to cut, and it is immaterial what the speed of the wheel C is; but when the machine moves through ordinary curves in cutting, and one driving-wheel moves faster than the other, the wheel C is rotated by the pinions E E′ with a slightly-reduced speed; but the loss of motion resulting in this case is so small as to be of no importance in the practical operation of the machine. The cutter mechanism is by this driving-gear connected with the driving-wheels in such manner that both driving-wheels are always in intimate connection with the cutter mechanism, so that upon starting the machine both wheels will transmit their power to the cutter mechanism, thereby avoiding any side draft and lost motion, and at the same time the noise incidental to the use of ratchets and pawls is avoided.

The construction represented in Figs. 8 to 11 is designed for mowing-machines in which the driving-wheels turn loosely on the axle. In these figures, G represents a shaft, which is supported in journal-boxes *g*, attached to the frame G′ of the machine.

H is a pinion secured to one end of the shaft G, and H′ is a similar pinion arranged at the opposite end of the shaft G, and connected by a sleeve, *h*, with the internal-gear wheel B′. This gear-wheel turns with the pinion H′ and sleeve *h* loosely on the shaft G, while the gear-wheel B is rigidly secured to said shaft. The hub of the main gear-wheel C turns loosely on the shaft G between the gear-wheels B B′, and is provided with two pairs of gear-pinions, E E′, as represented in Fig. 9. The pinions H H′ mesh with the gear-rims of the driving-wheels, so as to receive the power directly therefrom. The disk of the main gear-wheel C closes the pinion between the internal-gear wheels B B′, and excludes dust, &c., from the gear mechanism.

The construction represented in Figs. 1 to 7 is the more compact and less expensive of the two, while that represented in Figs. 8 to 11 is stronger and more durable.

I claim as my invention—

1. In a mowing or reaping machine, the combination, with the gear-wheel connecting with the cutter mechanism, and two driving-wheels from which power is derived, of a differential-gear mechanism connecting both driving-wheels with said gear-wheel, whereby the motion of both driving-wheels is transmitted to said gear-wheel cumulatively or differentially, according to the relative direction and speed of the rotation of the driving-wheels, substantially as set forth.

2. In a mowing or reaping machine, the combination, with two driving-wheels from which power is derived, of a gear-wheel, C, connecting with the cutter mechanism, pinions E E′, mounted in said gear-wheel to rotate therewith, and gear-wheels connecting the driving-wheels with the pinions E E′, substantially as set forth.

3. In a mowing and reaping machine, the combination, with two driving-wheels from which power is derived, of a gear-wheel, C, connecting with the cutter mechanism, pinions E E′, turning loosely on pins *f f′*, secured in the hub of the gear-wheel C and meshing with each other, and internal-gear wheels B B′, meshing, respectively, with the pinions E E′, substantially as set forth.

4. In a mowing and reaping machine, the combination, with the driving-wheels secured to shafts A A′, of the internal-gear wheels B B′, secured to said shafts, the gear-wheel C, pivoted in said shafts, and pinions E E′, mounted in the gear-wheel C and meshing with each other and the gear-wheels B B′, substantially as set forth.

Witness my hand this 6th day of November, 1884.

ADRIAN C. LATTA.

Witnesses:
L. E. HART,
W. A. HART.