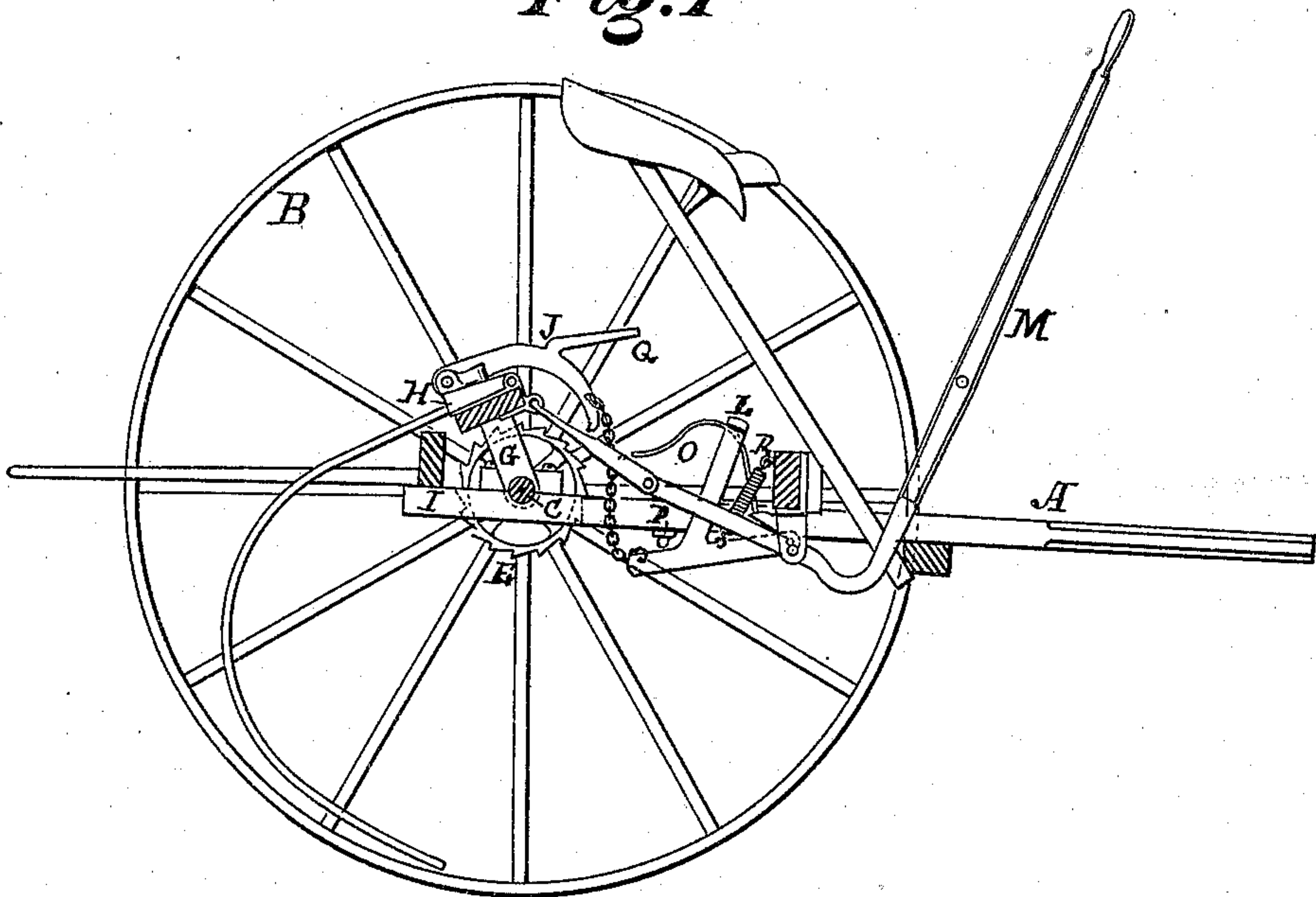


T. S. BROWN.  
HORSE-RAKE.

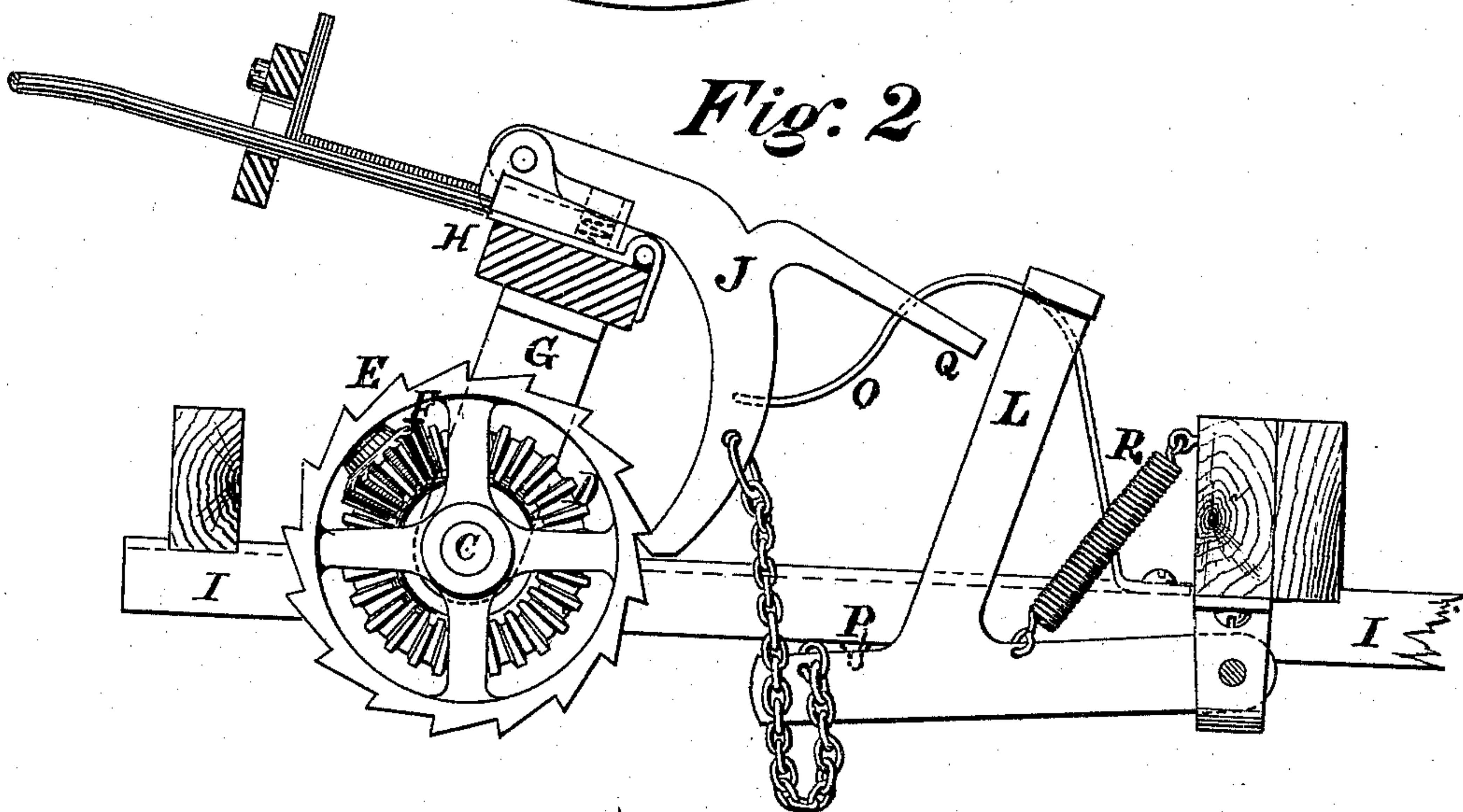
No. 174,112.

Patented Feb. 29, 1876.

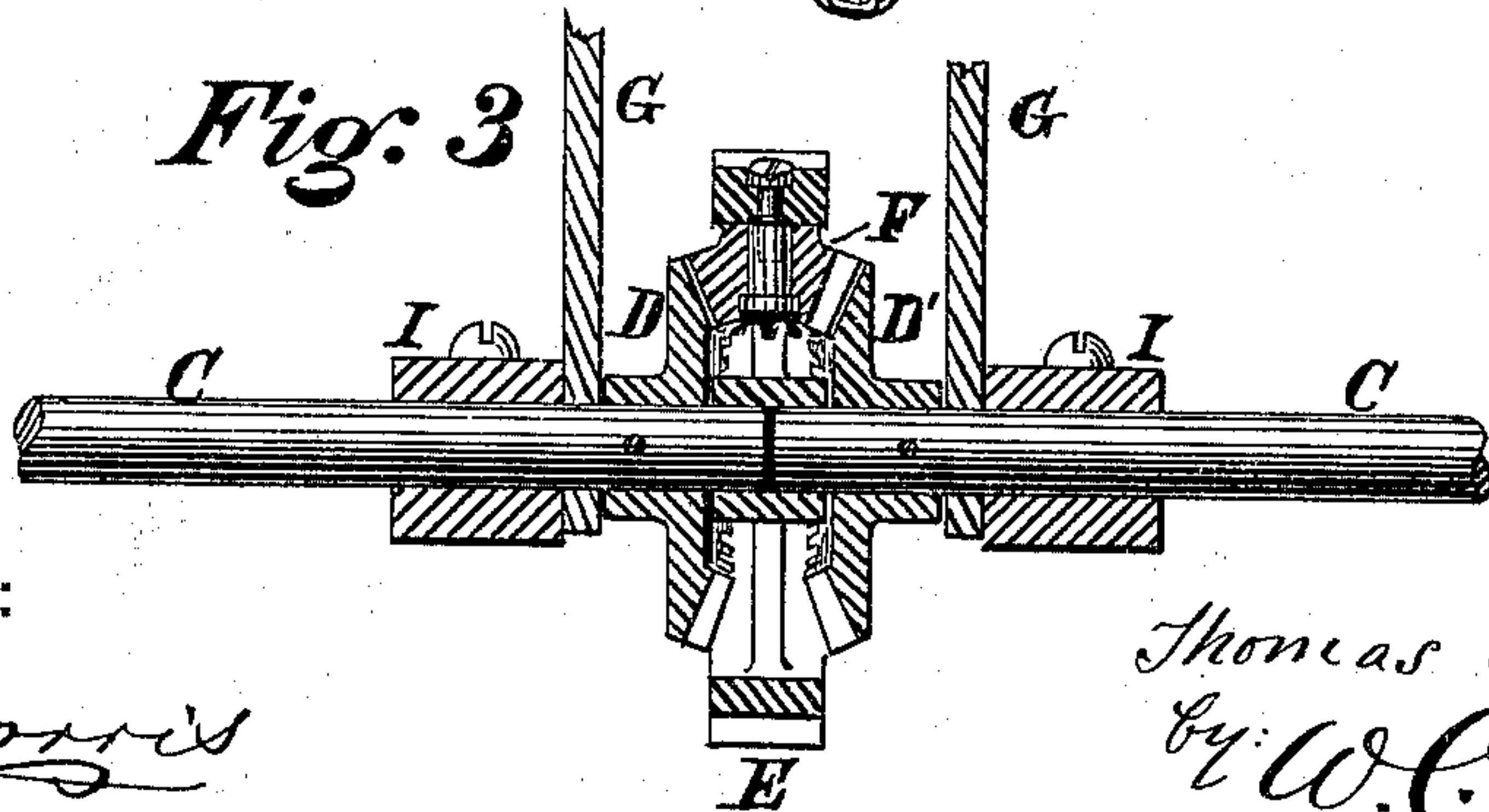
*Fig. 1*



*Fig. 2*



*Fig. 3*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

THOMAS S. BROWN, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN P. ADRIANCE, OF SAME PLACE.

## IMPROVEMENT IN HORSE-RAKES.

Specification forming part of Letters Patent No. 174,112, dated February 29, 1876; application filed December 31, 1875.

*To all whom it may concern :*

Be it known that I, THOMAS S. BROWN, of Poughkeepsie, New York, have invented a new and useful Lifting and Dropping Horse Hay-Rake, of which the following is a specification :

Figure 1 is a sectional side elevation of my rake; Fig. 2, a partial side section of the ratchet and differential gearing, and Fig. 3 a central longitudinal cross-section of the same.

The same letters denote the same parts in all the figures.

The nature of my invention consists in the combination and arrangement of the devices herein set forth and claimed.

The construction of those devices is as follows: A is the shaft; B, the wheel, and C the centrally-divided axle, set in bearings upon the thills S and perches I. To either outer extremity of the axle each wheel is keyed. D and D' are beveled wheels, also rigidly attached to the inner ends of each part of the axle, and facing toward one another. E is a ratchet-wheel, placed free to revolve upon the innermost extremities of both portions of the axle. Upon the inner side of the periphery of this ratchet, and pivoted to it, is a pinion, F, which engages with both bevel-wheels D and D', as shown in Fig. 3, the whole device forming a differential gearing for the wheels.

Supported upon the axle, and elevated by prop-pieces G above the gearing described before, is the rake-head H, carrying the teeth. Central upon the rake-head, pivoted to it, and directly above the ratchet, is a pronged pawl, J, kept in repose, elevated somewhat by a coiled spring beneath it and upon the head. Pivoted below to a cross-brace of the frame-work is a depressing foot-lever, L, connected by a chain to the pawl, and kept up ordinarily by a spring, R.

M is a lever, and N a link, to lift the rakes at will by hand. O is a spring to assist in throwing back and off the rake-head when the pawl is released from the ratchet.

P is a ratchet release-piece set transversely upon the perches, to deflect the prong Q of the pawl, and thereby release the latter

from the ratchet, in the manner hereinafter described.

Such being the construction of my device, its mode of operation is as follows: When driven forward in a direct line, the force and speed from each driving-wheel upon the bevel-wheels D D' being the same, the pinion F is held stationary between the former, and by them is carried around, consequently rotating with it, the ratchet. In this position the rake-teeth, of course, are down and raking. When it is desired to lift them, the foot of the driver depresses the foot-lever L, straightening out its chain and drawing down the pawl until it clutches in the ratchet, when the ratchet, by its own rotation, carries around with it the pawl, and with it the rake-head, to which the latter is attached, whereby the teeth are lifted and carried up until the continued rotation of the ratchet with the pawl has brought the prong of the latter into contact with its release-piece, whereby the pawl is released and the rake-head, by its gravity and the expanding power of the spring O dropped, is thrown back into position for raking.

When the rake is turned around, the differential gearing allows free play to both wheels without shock or strain, the power being always divided between them in exact proportion to their relative speed.

The principal advantages of my rake are, that the wheels act in concert to entirely prevent all lateral motion or thrashing of the thills sidewise when the rake is thrown in gear to discharge the load; that the rake is always lifted in the center, preventing all cramping or twisting; that both wheels act equally upon the rake when discharging its load, whether running in a straight line or a circle; and that the power is always divided between the wheels in exact proportion to their relative speed.

Having thus described my invention, I claim—

1. The combination, in a horse hay-rake, for the purpose specified, of the wheels B, the divided axle C, the bevel-wheels D D', the ratchet E, and the pinion F.

2. The combination of the foot-lever L,

the ratchet E, the pronged pawl J, and the ratchet release-piece P, substantially as described.

3. The combination of the spring O with the rake-head and releasing mechanism hereinbefore described, for the purpose specified.

4. The combination, in a lifting and dropping horse hay-rake, of the wheels B, divided

axle C, bevel-wheels D D', ratchet E, pinion F, foot-lever L, pawl J, ratchet release-piece P, and spring O, in the manner and for the purpose specified.

THOS. S. BROWN.

Witnesses:

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mbo.