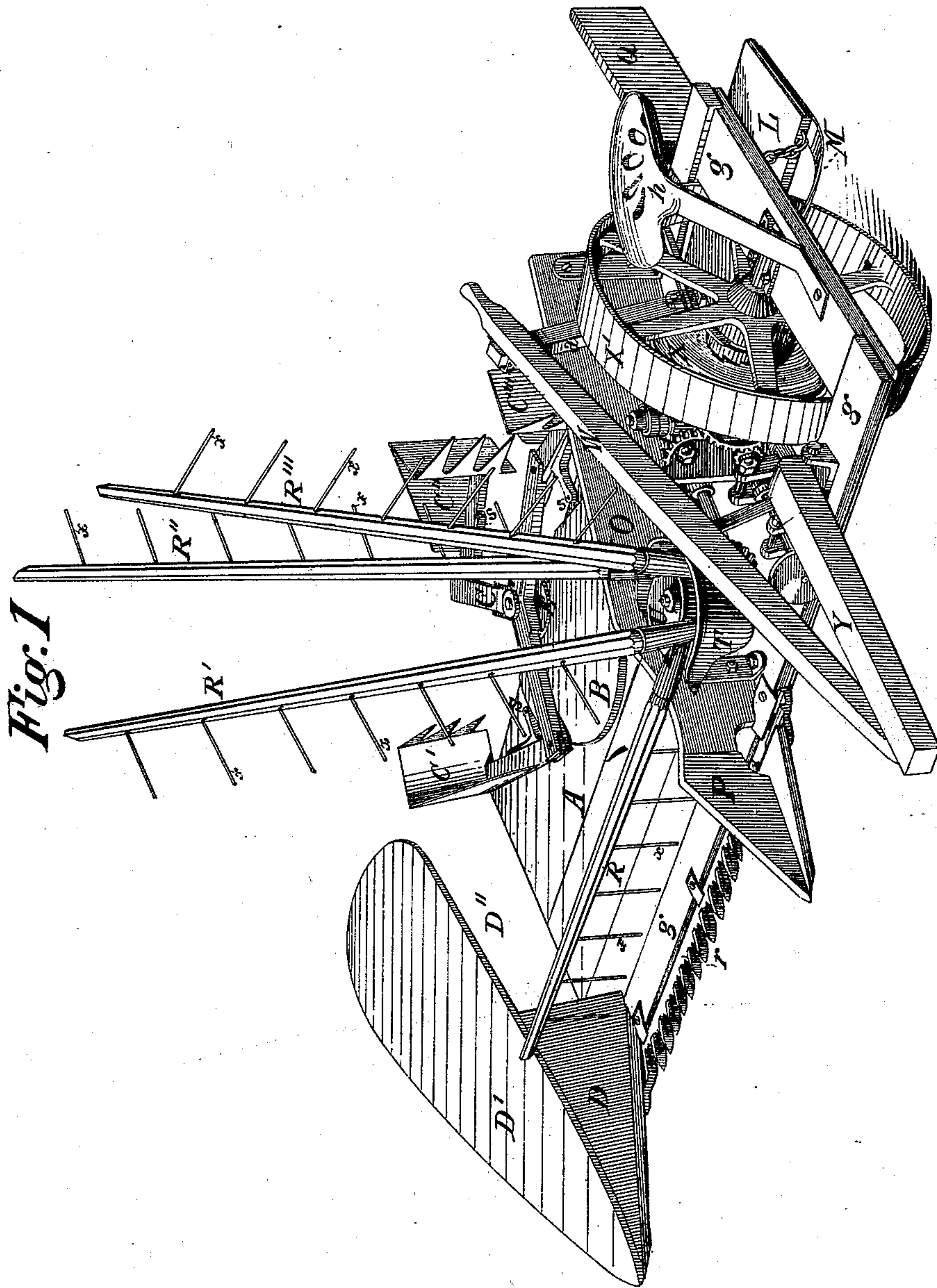


S. JOHNSTON.
Hand-Binding Harvester.
No. 223,919. Patented Jan. 27, 1880.

3 Sheets—Sheet 1



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Inventor:

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John Overding

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Fig. 2

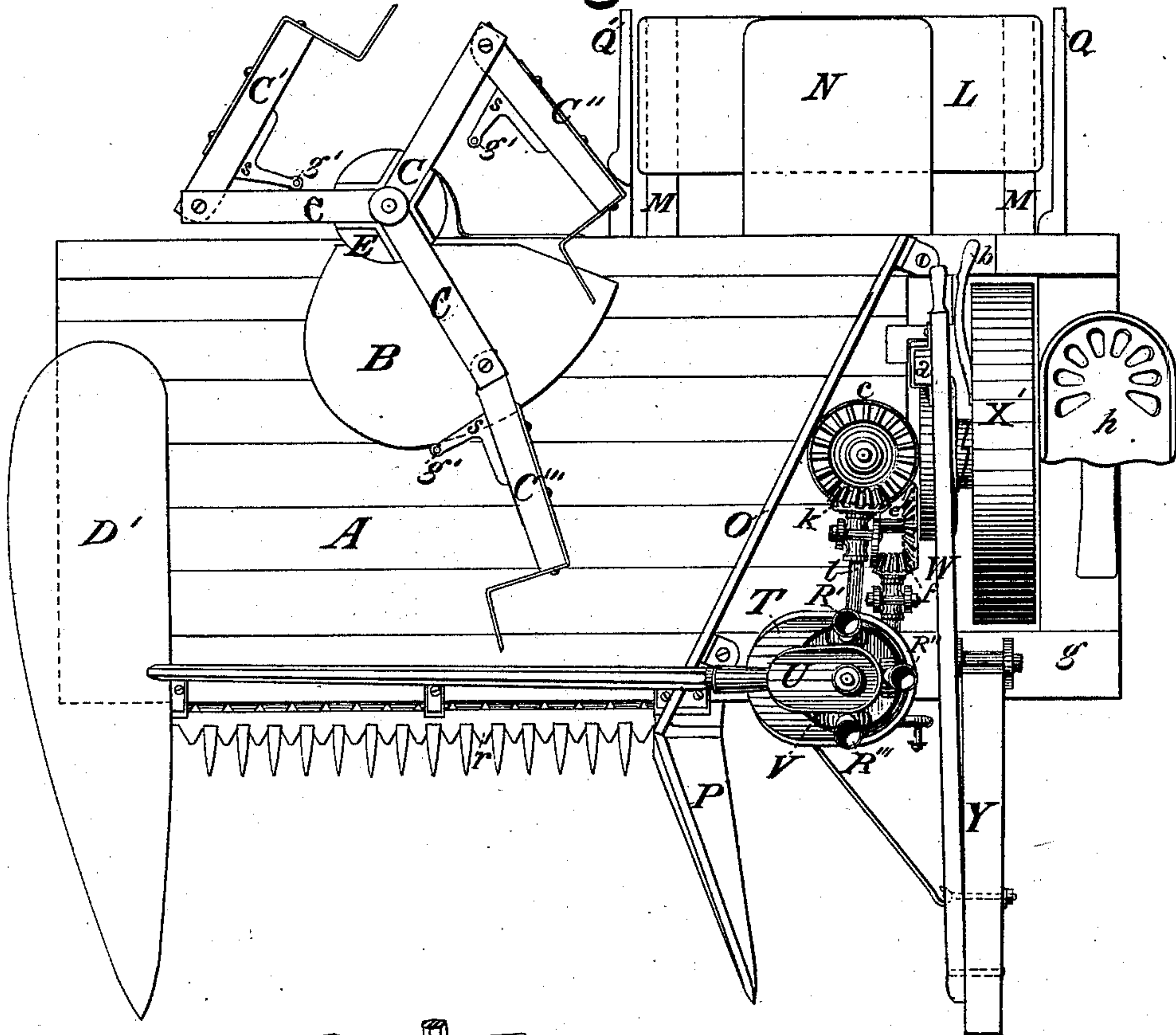
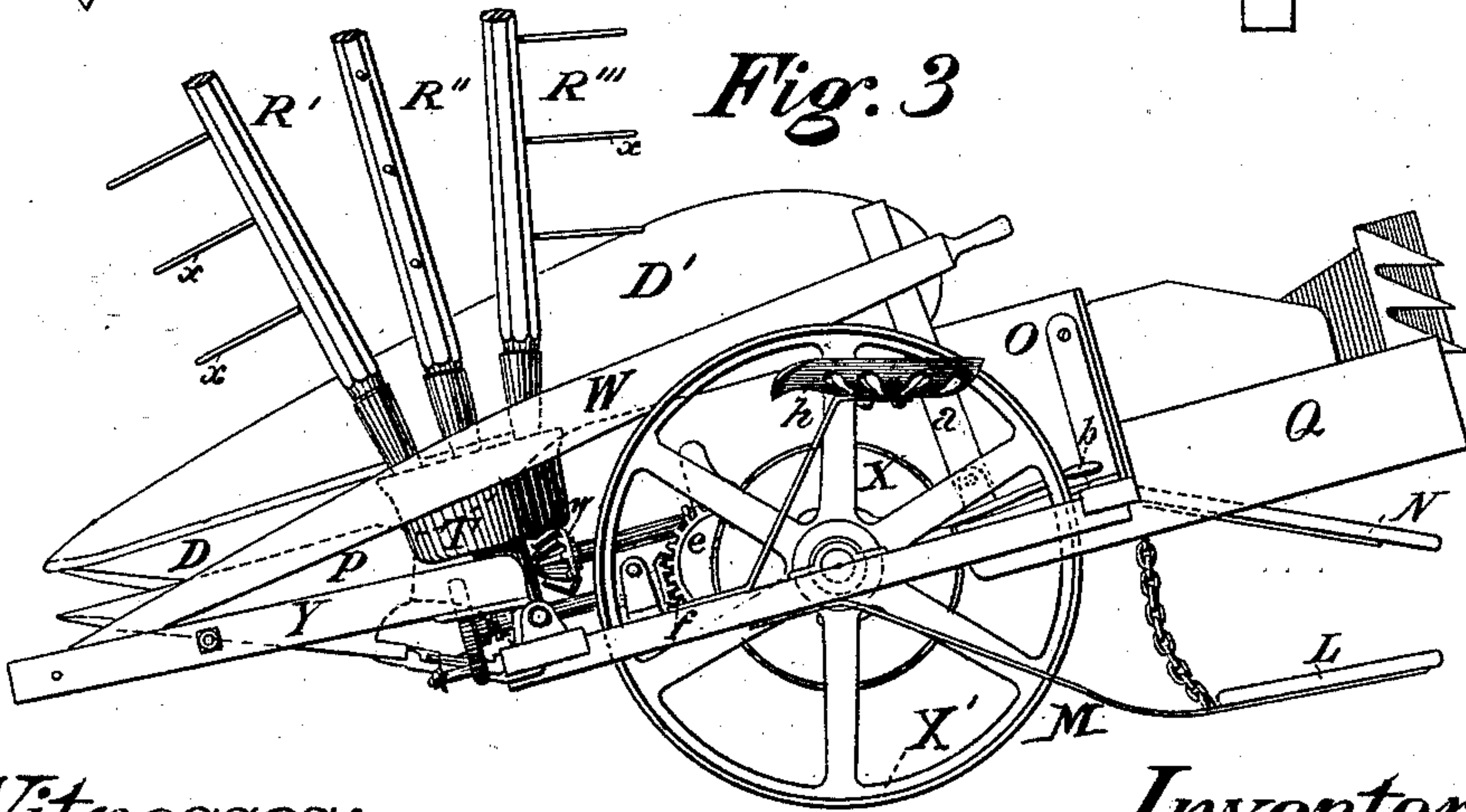


Fig. 3



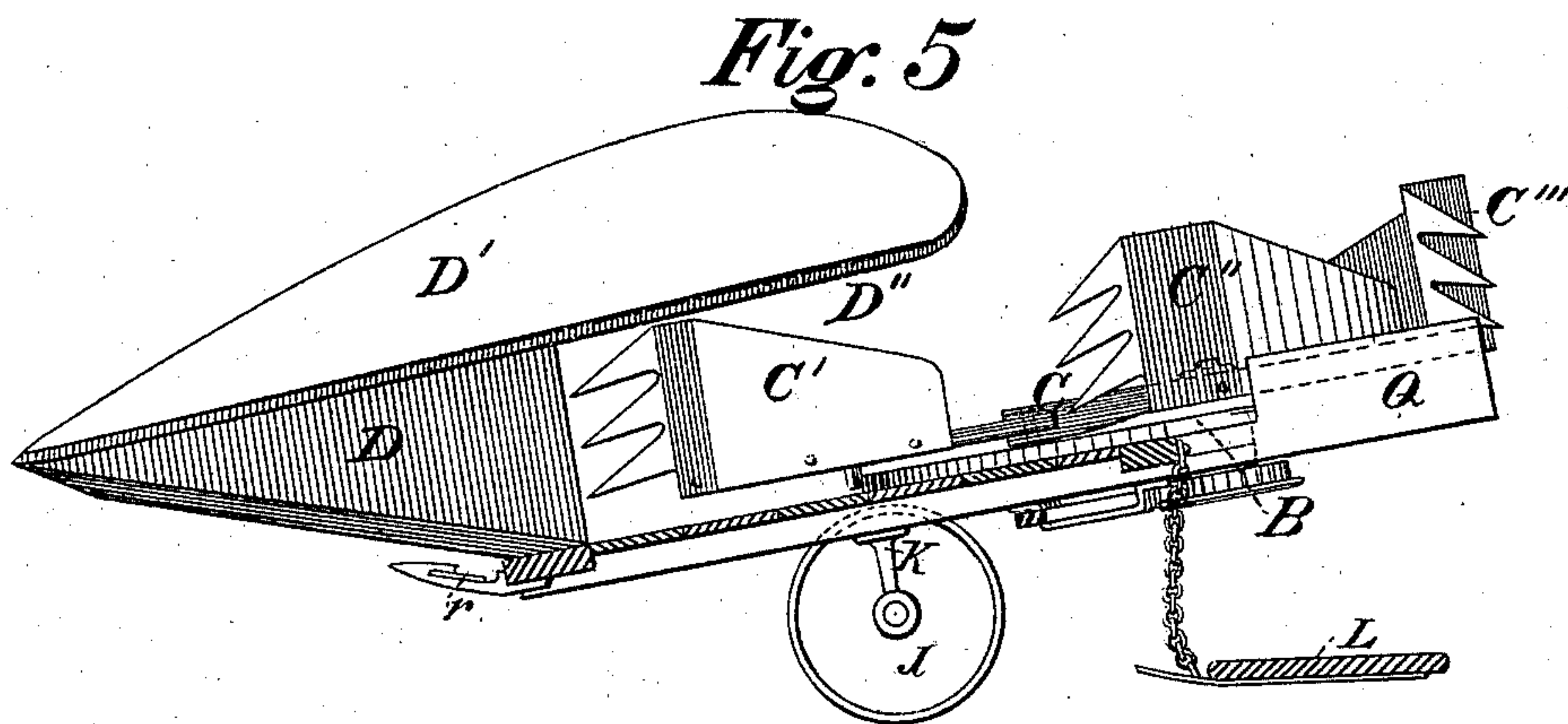
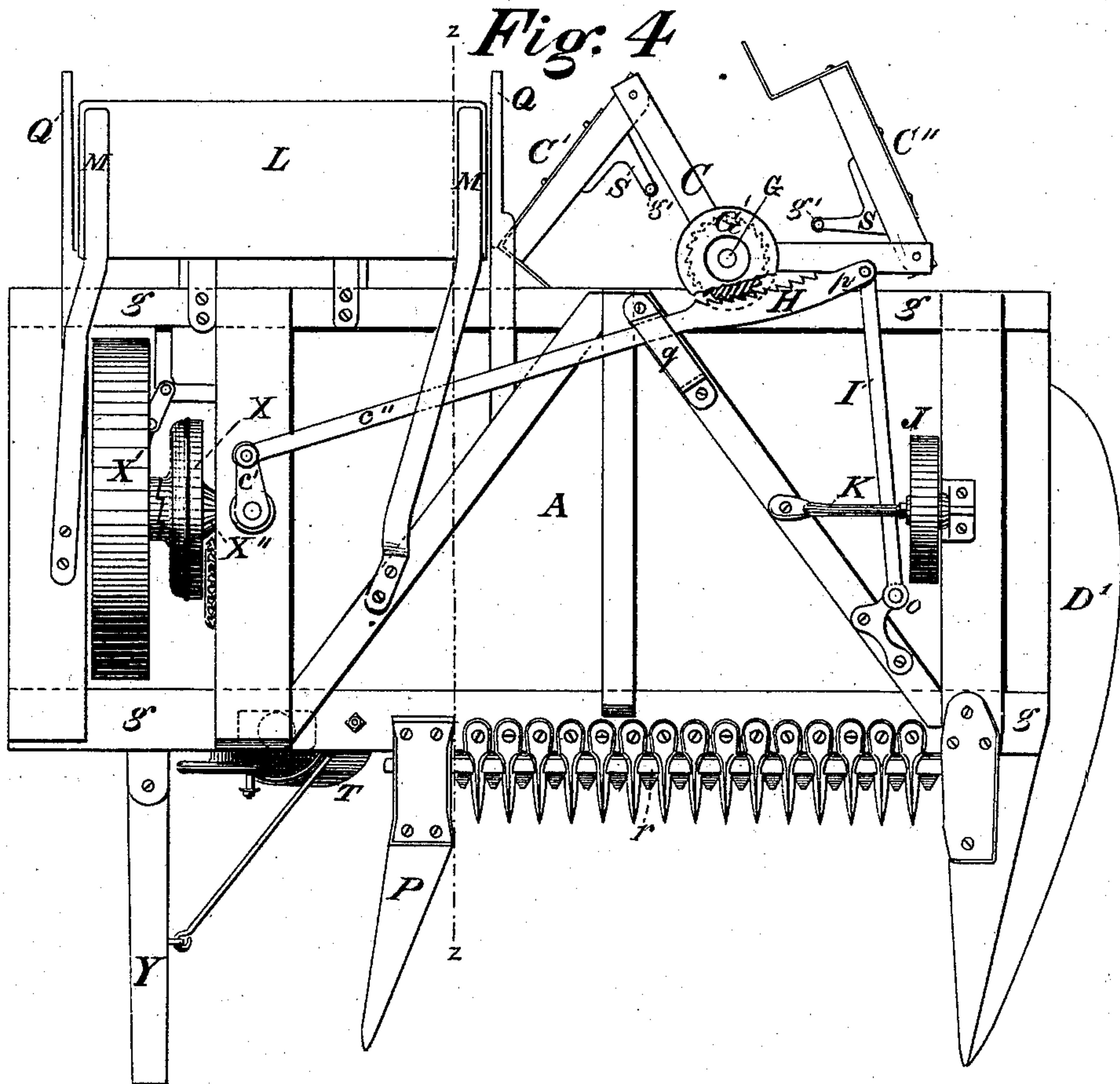
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UNITED STATES PATENT OFFICE.

SAMUEL JOHNSTON, OF BROCKPORT, NEW YORK.

HAND-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 223,919, dated January 27, 1880.

Application filed October 1, 1875. Patented in England, September 16, 1875.

To all whom it may concern:

Be it known that I, SAMUEL JOHNSTON, of Brockport, county of Monroe, State of New York, have invented certain new and useful

5 Improvements in Harvesting-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1 is a perspective view of a harvesting-machine embodying my improvements. Fig. 2 is a plan view; Fig. 3, a side elevation; Fig. 4, a bottom view of the same; and Fig. 5, a vertical section taken on the line $z z$, Fig. 4.

15 Similar letters of reference denote like parts in all the figures.

My invention relates, first, to a novel construction of platform-rake provided with two or more discharging and compressing rake-

20 heads, which have an intermittent rotary movement around an axis perpendicular to the platform, and which serve to compress the gavel and to remove the same in compact form, as hereinafter described.

25 It further relates to the combination of a rake or a series of rakes moving over the platform in a plane parallel therewith, for removing the grain, with a series of gathering-rakes revolving on a vertical axis and controlled by

30 a cam so arranged that they will all rise automatically, after passing the cutters, in such manner as not to interfere with the action of the platform-rake.

It further relates to the arrangement of the

35 rake-heads of the intermittently-rotating platform-rake in such relation to each other that when one of the rakes has moved over the platform to remove the gavel and is at rest another rake will rest in position to immediately begin to act on the grain when the rake-

40 shaft again begins to rotate, as hereinafter described.

In the accompanying drawings, A represents the grain-platform of the machine; B, a

45 fixed cam-plate thereon for controlling the pivoted rakes moving over the platform, and C C C rake-arms secured in radial sockets to a disk or head, E, connected with the upper end of an upright shaft located at or near the rear

50 edge of the platform A, as shown. To the outer ends of these arms C rakes C', C'', and

C''' are pivoted, or, rather, arms forming jointed extensions of the arms C, and to which the rake-heads are attached, and to these pivoted arms are secured elbows or angular plates 55 s, one arm of which projects in rear of the rake-arm, and is provided with a pendent spur or pin and friction-roller at g' , which moves in contact with the forward edge of cam-plate B, for holding the rakes in the re- 60 quired position for sweeping across the platform and for compressing and removing the gavels therefrom.

The vertical shaft G, with which the rake-arms C are connected, is journaled in a suit- 65 able box attached to the platform-frame, and is provided at its lower end with a toothed wheel, G', (see Fig. 4,) provided on its lower face with a projecting flange or disk for holding and guiding the actuating rack-bar, here- 70 inafter described.

H is a toothed rack for operating the wheel G' and shaft G, said rack being formed upon or applied to a rod or bar, c'' , connected at its inner end with a pendent crank-arm, c' , on a 75 vertical shaft, to which motion is imparted by a double-bevel wheel, c , on its upper end, engaging with and operated by a bevel-pinion, X, on the main gear or driving shaft. The outer end of the rod or rack-bar H is pivoted 80 at p to the rear end of a swinging link, I, or other suitable guide and support, which will permit the endwise and vibratory movement of the bar due to its attachment to and the rotation of crank-arm c' . By this arrange- 85 ment the rack H will be thrown into engagement with the toothed wheel G once in each revolution of the crank-arm c' , and by its end movement, as the crank moves laterally, will move the wheel G' and its shaft G through 90 about two-thirds (more or less) of a revolution, sufficient to carry one of the rakes from a position of rest underneath the rear elevated end of the divider or dividing-board D' across the front of the platform and past the com- 95 pressing board or fender O to the point of discharge at the rear of the platform, a second rake at the same time moving into the position of rest from which the preceding rake started, and there stopping while the gavel is 100 being bound, or until sufficient grain has accumulated to form another gavel. Thus one

of the rakes is always in readiness to act instantly on the grain for removing it when movement is imparted to the rake-shaft.

N is a table connected with the rear edge of the platform at the point of delivery of the gavel, and set, preferably, inclining downward to the rear, for facilitating the removal of the bundles.

The binder's stand L is located below the table N upon spring strap plates or bars M M attached to the frame, as shown in Fig. 4, and upheld at the desired height at their rear ends, which support the stand L by chains *m*. The binders are located upon the ends of the stand L, with the table N between them, in convenient position to bind the gavels as fast as presented to them by the rakes.

In operation, the rake moves the gavel into proper position to be bound, still holding it compressed against the rear end of board O, and rests in that position until the bundle has been securely bound, when the movement of the shaft G for causing another gavel to be removed from the platform, causes the rake that last swept the platform, by a slight further movement backward, to throw the bound bundle off of table N upon the ground, after which the pivoted rake comes in contact with the guard Q' at the end of the binder's stand, and is folded backward into the position shown by rakes C'' C', in which folded condition they move onward in succession into position to again remove the grain. Thus, supposing the rake C' to have passed through the movements described, the rake-heads C'' and C''' follow the same path and act successively in the same manner as just described for the rake-head C', so that at one instant of time one rake-head is pausing before passing across the platform behind the cutters, the second rake-head is pausing and holding the gavel while being bound, and the third rake-head is in an intermediate part of its course between the last two described rake-heads.

Other means than those shown and described may be employed for imparting the intermittent rotary movement to the compressing and discharging rakes, if preferred. The wheel *c*, beveled on its lower face to receive motion from the bevel-wheel X, as explained, is beveled also on its upper face, and drives a bevel-wheel, *k*, on the rear end of a shaft, *t*, which, at its forward end, has a bevel-wheel, *w*, which engages with and drives a bevel-wheel mounted and rotating on a vertical shaft, and with which the gathering-rakes R R' R'' R''' are connected. The vertical shaft around which these rakes rotate is located at or near the inner or heel end of the cutters, on the stubble side of the shoe P and fender O, upon a suitable rake-stand, provided at its upper end with

a bowl-shaped cam, T, the pivoted rake-arms moving over said cam and between it and a cam-plate, U, attached to the upper end of the stationary rake-shaft or pivot, said cam and cam-plate serving as a guide to the movements of the rake-arms around their vertical axis. This cam-guide is so constructed and arranged as to cause the teeth *x* of the rake-heads R R' R'' R''' all to descend into the grain in advance of and to gather it up and present it to the action of the cutters, and then to rise out of the way of the compressing and discharging rakes C' C'' C'''. All danger of interference between the rakes is further obviated by so timing their movements relative to the common driving gear *c* that the movement of the arms C' C'' C''' across the platform will be intermediate between the arms of the gathering-rake.

Parts of the machine not particularly described may be constructed in any usual or preferred manner.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The compressing and discharging platform-rake C, provided with two or more arms, and having an intermittent motion, substantially as described.

2. A combination of the series of gathering-rakes R R' R'' R''', revolving on a vertical axis, and controlled by a cam so arranged that they shall all rise after passing the cutters, and a rake or series of rakes moving horizontally across the platform in discharging the grain.

3. The combination, with a gathering-rake the arm or arms of which are pivoted to and move around a vertical axis, of a compressing and discharging rake or rakes moving over the platform in a plane parallel therewith for removing the grain.

4. Two or more compressing and discharging platform-rakes connected with an intermittently-rotating shaft, and operating substantially as described, whereby, while one arm has moved over the platform and holds the compressed gavel, another arm has been moved into position, and rests in readiness to move over the platform when the shaft is again rotated.

5. The gathering-rake R and the compressing and discharging rake C, arranged and operating substantially as described, both connected with and driven by the common gear-wheel *c*, whereby their movements are timed each relatively to the other, as set forth.

SAMUEL JOHNSTON.

Witnesses:

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R. S. CHILD, Jr.