

W. A. KIRBY.  
HARVESTER.

No. 90,273.

Patented May 18, 1869.

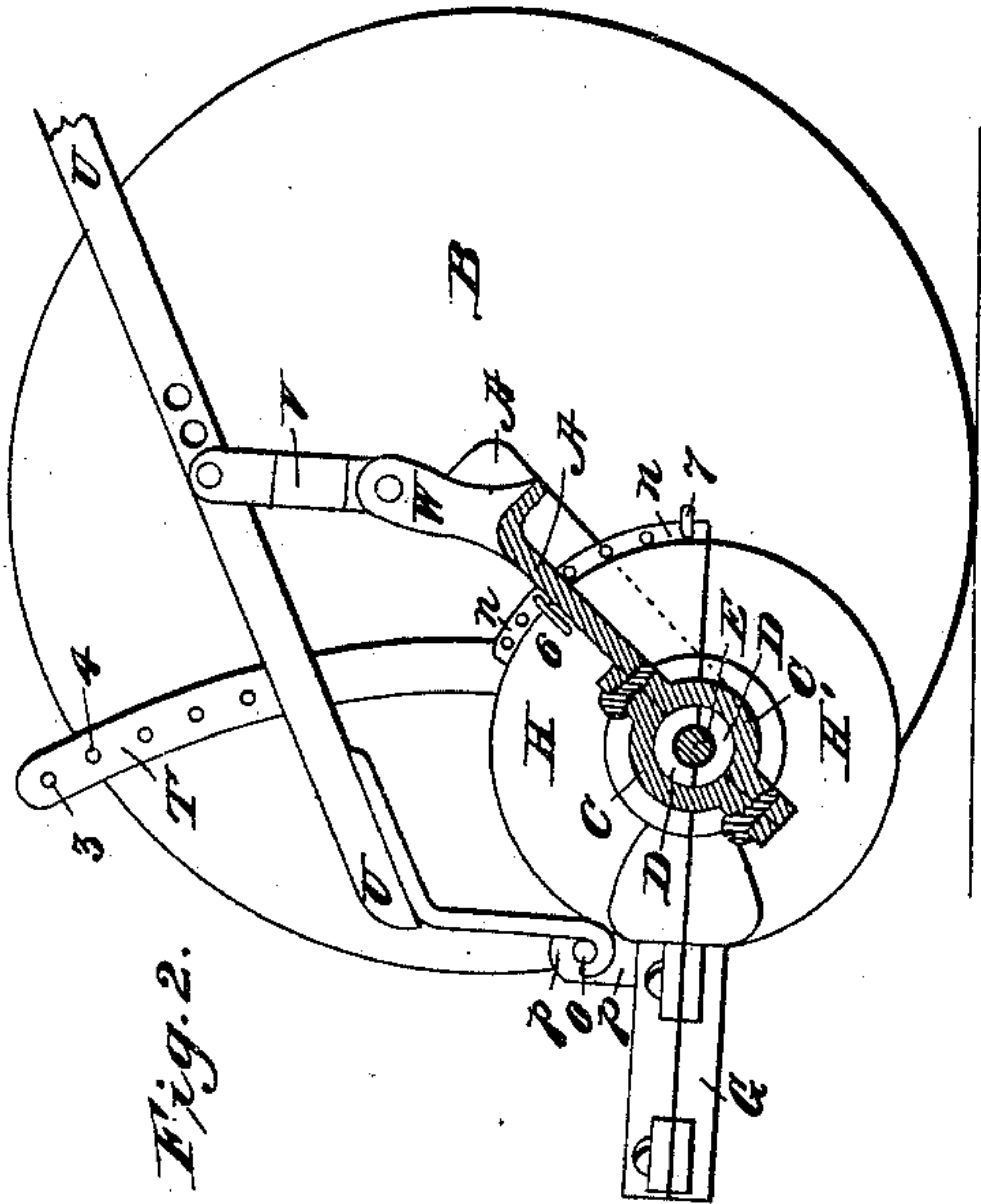


Fig. 2.

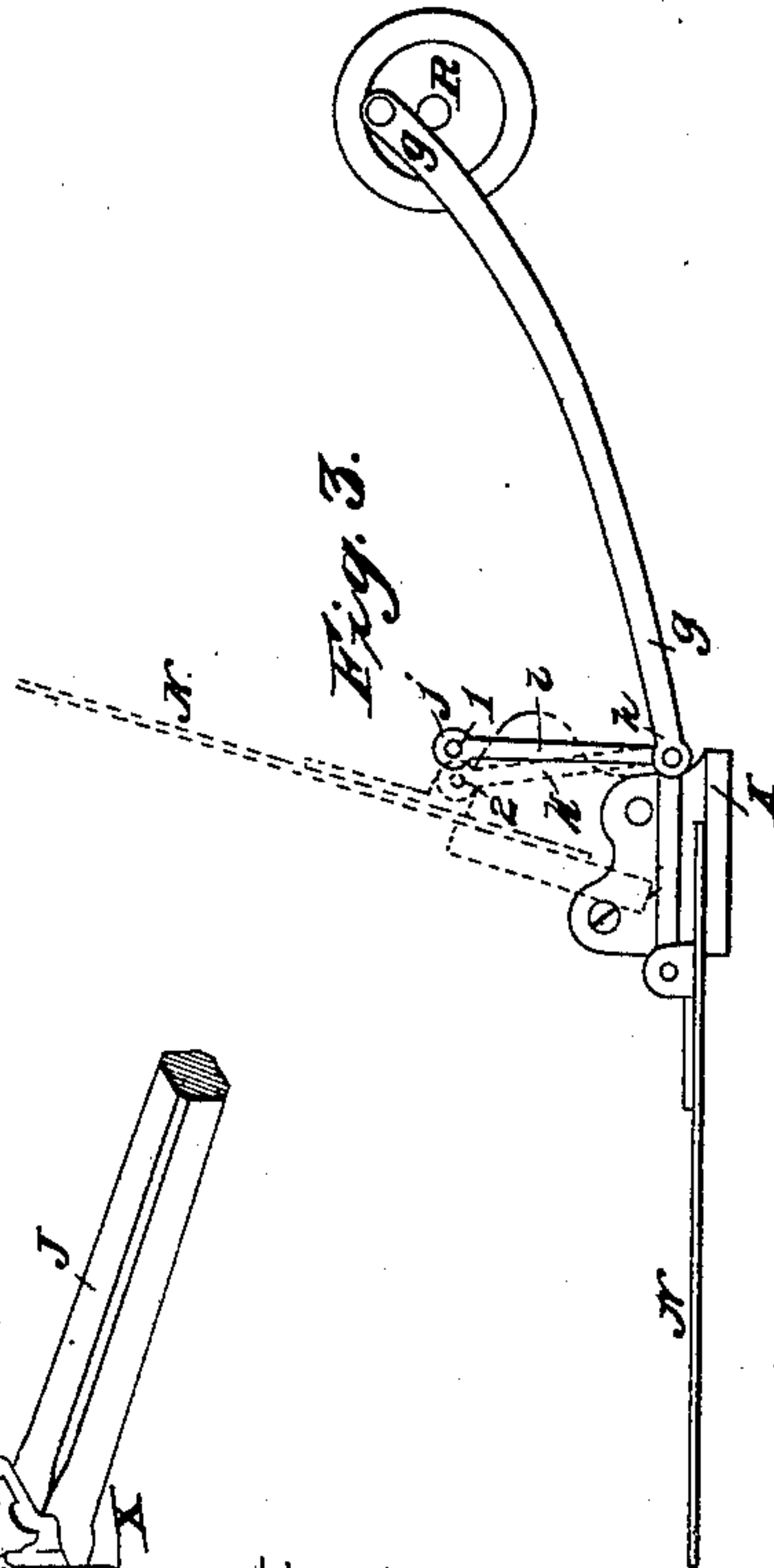


Fig. 3.

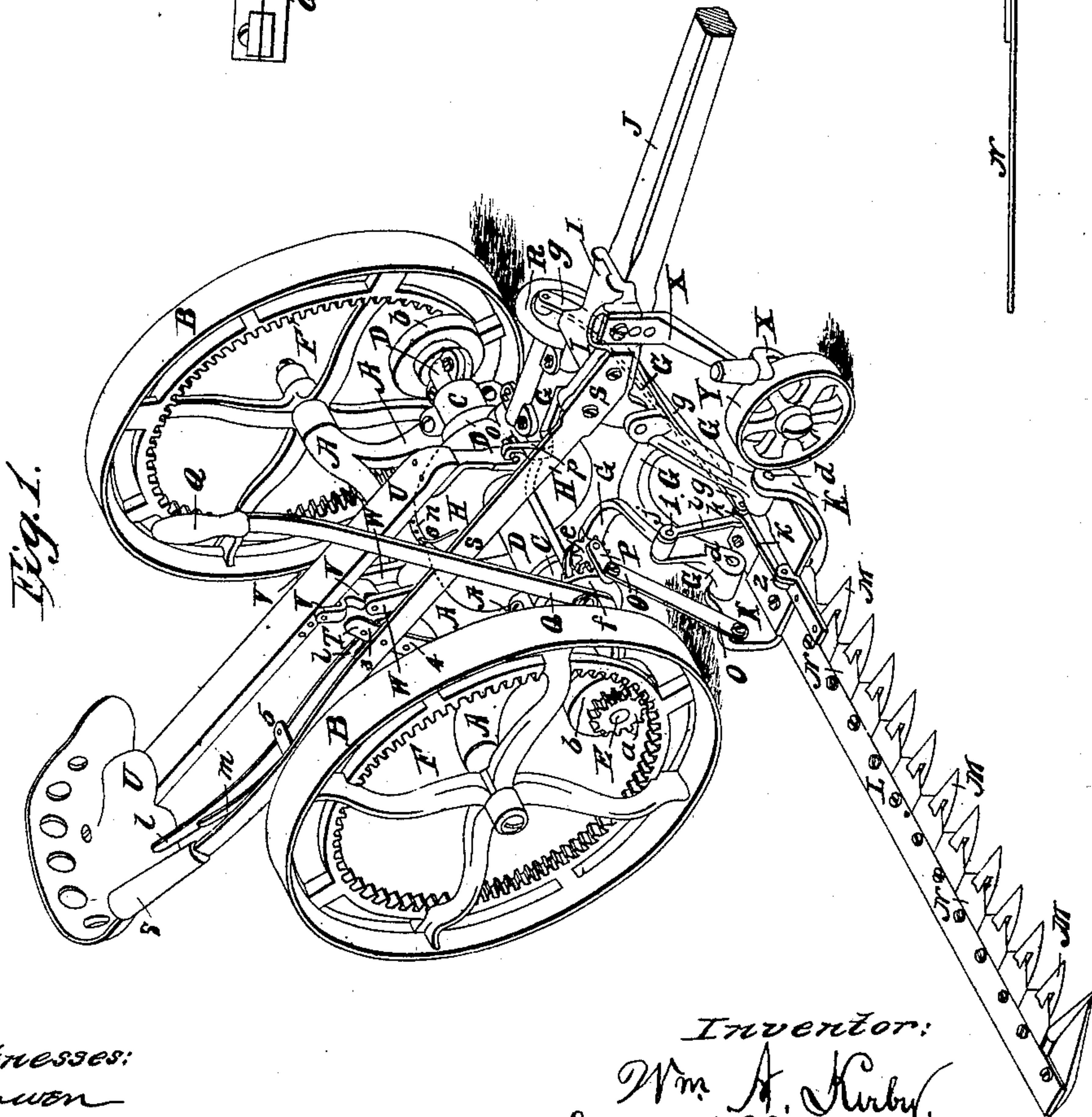


Fig. 1.

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# United States Patent Office.

WILLIAM A. KIRBY, OF AUBURN, NEW YORK, ASSIGNOR TO HIMSELF AND DAVID M. OSBORNE, OF SAME PLACE.

*Letters Patent No. 90,273, dated May 18, 1869.*

## 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 A. KIRBY, of Auburn, in the county of Cayuga, and State of New York, have invented certain new and useful Improvements in Harvesting-Machines, and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the machine.

Figure 2 represents a vertical section through the same.

Figure 3 represents a detached portion of the machine, to show the positions of the pitman-connection, when the finger-bar and cutting-apparatus is in working-position, and when it is folded up for transportation.

Similar letters of reference, where they occur in the separate figures, denote like parts of the machine in all of the drawings.

My invention consists, first, in hinging the axle-frame of a harvesting-machine, on which two driving-wheels are hung, to bearings, or bosses, through which the shaft, on which the pinions are placed, passes, or in which it turns.

My invention further consists in combining, with two hinged frames, and with an adjustable stop, a hand-lever, for raising and lowering the cutters, and also for rolling the finger-bar on the ground, to raise or lower the points of the guards, as well as for restraining these motions within proper working-bounds.

My invention further consists in combining, with two frames and a tongue, hinged to each other, devices by which the joint between the tongue and the main frame, or the joint between the two frames, may be rendered flexible or rigid, as occasion, or the character of the work to be done may require.

My invention further consists in combining, with a two-wheeled harvesting-machine, which has two frames, hinged to each other, a lever-seat, connected to both frames, and spanning the joint between them, so that the driver in said lever-seat can properly balance the machine, and raise or lower the cutting-apparatus at pleasure.

My invention further consists in a pitman-connection, which, when the finger-bar and cutting-apparatus are in working-position, will drive the cutter, and which, when the finger-bar and cutters are folded up for transportation, will cease to drive the cutters, though the pitman continues to run, or vibrate.

My invention further consists in combining, with the inner shoe of a harvesting-machine, an independently-hung caster-wheel, which shall run, when the machine is advancing, directly in front of said inner shoe, to crowd down the grass or stubble, and make a track

for said shoe, and serve all the purposes of a caster wheel, when the machine is being turned around.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same, with reference to the drawings.

A represents an axle-frame, on which the two carrying and driving-wheels, B, are hung, and on which they loosely run.

On bracketed arms on the axle-frame are boxes, or bearings C, which receive a sleeve, boss, or hollow shaft, D, through which the pinion-shaft E passes, and in which it turns, as will be explained.

On each of the main wheels B, there is an internal gear, F, which gears mesh into and turn the pinions a, one on each end of the shaft E.

Each of the pinions as a ratchet, or clutch, arranged in a clutch, or ratchet-box, b, with which they respectively act, so as to be fast with, or loose on, the shaft, as the machine may be advancing, or when either main wheel is not turning, or is turning backward, when the machine is being turned around at the end of the swath, in the usual well-known way.

The sleeve, or boss D, for the sake of convenience, is cast in two parts, an upper and an under part, or with a horizontal joint, so as to be readily put together, or taken apart, when necessary, for repairs; and this boss forms a part of what constitutes the main frame G.

On the upper half, or part of the sleeve D, is cast the upper half H of the case, or shell, which encloses the gearing; and on the under part of the sleeve is cast the lower part H' of said case, or shell, the two halves, or parts forming a close encasement of the gearing.

The under part of the boss, and the under part of the encasing-shell H, are a part of the main frame G, to which the axle-frame A is hinged, as heretofore stated, by the bearings, or boxes C, whilst the upper portions of the boss and of the case are more in the nature of caps to such under portions.

The tongue-plate I, to which the tongue J is fastened, is hinged to the front of the main frame G, as shown at c, so that there are two hinged connections between the pole, or tongue, and the axle-frame A, whilst said frame itself has a rising-and-falling motion, by means of its journals resting and rolling in the hubs of the main wheels B B.

All of these hinged connections, or motions are, however, controlled, or controllable, so that they may yield or be rigid, as will be hereafter explained.

To the downwardly-projecting portions of the main frame G, there is pivoted, as shown at d d, the inside shoe K, to which the finger-bar L is attached; and this finger-bar is furnished with guards M, and a cutter, N, in the usual way.



To the after-portion of the shoe K, there is hinged one end of a connecting-bar, or link, O; the other end of which is pivoted to a crank-arm, P, that is fastened on or to the shaft, or journal of a bevel-pinion, *e*.

To the main frame is hung a bevel-gear, *f*, that works into, and turns the bevel-pinion *e*.

To said bevel-gear *f*, there is secured a hand-lever, Q, which extends upward, and in proximity to the driver's seat, so that the occupant of the seat can seize said lever, and, by operating it, raise up the finger-bar and cutters, and allow them to rest against the main frame, as shown by the red line in fig. 3, or any less distance or height, for passing obstructions, and let them down again, at pleasure, and with comparatively slight manual effort.

The crank-wheel R receives its motion through the gearing encased in the shells and portion of the main frame.

The pitman *g* is connected, by a wrist, to the crank-wheel, R, but, instead of extending thence directly to the cutters N, it is pivoted, at *h*, to a pendulum-rod, or hanger, *i*, that is pivoted, at *j*, to the main frame G, (or extended portion of said frame;) and from the hinged connection at *h*, a second pitman, *k*, extends to, and is connected with the cutters N, by which, when in cutting-position, they are vibrated.

The pendulum, or hanger *i*, and the second pitman *k*, should be of about the same length, so that when the finger-bar is folded up against the main frame, as shown by the red lines in fig. 3, the two hinged pitmen, *i k*, will freely swing from, or upon their two pivoted points, 1 2, and without moving the cutters, though the main pitman *g* continues its motion.

The advantage of this pitman-connection is, that the finger-bar and its appliances (the cutters) may be raised and folded up, without disconnecting any of the gearing, or whilst the gearing and the main pitman continue their motions, the cutters, in that condition, having no motion, as it is all taken up in the two hinged pitmen, *i k*.

When the finger-bar and cutters are lowered down into working-position, the cutters are reciprocated again, without any aid, assistance, or effort of the attendant on the machine.

To the tongue-plate I, which is hinged to the main frame at *c*, as heretofore described, there is permanently affixed a lever, S, which extends rearward, so as to be readily seized by the operator in his seat.

The lever S moves past or over a curved arc, T, furnished with a series of holes, 3, 4, &c., said arc being fastened to a lug on the sleeve C, which sleeve is really a part of the main frame of the machine.

The lever S has pivoted to it at 5, a lever, *l*, which is seized by the hand of the operator when he grasps the main lever S, and, by compressing his grip upon the two, withdraws a bolt in the opposite end of the lever *l*, from the hole in the arc, which it had for the time being occupied, and allows the lever S to be freely moved along or past the arc T.

When the grip, or pressure upon the lever *l* is removed, a spring, *m*, under the rear end of said lever, causes the bolt, or stud at the other end to shoot into the first one of the holes it comes to in the arc, and there permanently hold until again released.

The lever S, extending from the pole J, and capable of being rigidly united to the arc T, crosses, or spans the joint between the pole and the main frame, which is at *c*, so that, whenever the lever S is free from the arc, then there is a hinged connection between the pole and main frame; and *per contra*, when the lever S is made fast to the arc, then there is no joint between the pole and main frame; or, in other words, the pole may be a rigid, or a loose, or a hinged one, in connection with the main frame, at pleasure, or as may be desired.

The object of the lever S and its connections, is to

roll the finger-bar and cutters in the line of their advancing-motion over the ground, so as to raise or lower the points of the guards, whilst the finger-bar is moved along in contact with the ground. It is also used for raising up, or lowering the finger-bar, or cutting-apparatus, under other circumstances, as will be hereafter explained.

On the after-portion of the perimeter of the shell, or case H H', there is a rib, or flange, *n*, furnished with a series of holes, for the reception of pins, or bolts, and in the axle-frame A, there is a recess, or groove, through which this rib, or flange can move, or play.

When pins, or bolts are put into the holes in the rib, or flange *n*, as at 6 7, they define and limit the extent of the hinged motion between the main frame and the axle-frame (for it will be remembered that the case H H' is substantially, if not really, a part, or portion of the main frame) to those two points. If, however, a pin, or bolt be put in the arc, one immediately below, and the other immediately above the axle-frame, there will be no play, or motion between the two frames, so that, by this rib, groove, and pin, or bolt-arrangement, any requisite extent of hinged motion may be had between the two frames; or, the hinged connection may be entirely changed to a rigid one, as occasion, or the work to be done, may require.

When the connection between the two frames is thus rendered rigid, then the lever S may be used as a raising-and-lowering lever.

There is still another lever-connection between the two frames A G, viz, by means of the lever-seat U, and its attachments thereto, and the shifting-position of the weight of the occupant thereon.

The front end of the lever-seat U, is hooked to a stud, *o*, which is set in a bracket, *p*, which bracket is a part of, or fixed to, the main frame.

At about the center in length of the seat bar, or lever, there is a toggle, or link, V, which can be set further back or forward, in said bar, or lever, to change its fulcrum, at its upper end, whilst its lower end is pivoted, or hinged to two rigid arms, W W, on the axle-frame, so that said bar, or lever has a hinged connection to the main frame, and an adjustable connection to, or with the axle-frame.

This bar, or lever U crosses, or spans the hinged connection between the two frames, and when said joint is not otherwise controlled, the occupant of the seat can raise up or let down the main frame, at pleasure, that is, within working-limits.

As a general thing, the flexibility between the two frames, especially in mowing grass, would always be required, in which case the lever-seat is very desirable, in easing, or lifting the cutters over the smaller intervening obstructions in its path. But even when the two frames are rigidly connected together, the lever-seat is important in easing the machine over any irregularities in the ground, which the occupant of the seat can do, by simply swaying his body backward or forward, the fulcrum being adjusted to the weight of the driver.

To the tongue-plate I, there is attached a bent arm, X, which projects outward toward the standing grain, and downward toward a point in the line of the inner shoe K; and in the end of this arm X, there is placed a caster-wheel, Y, which, when the machine is cutting, runs immediately in front of the inner shoe, and beats down, or bears down, the grass or stubble, where the shoe is to run, thus making a path for it to move in, without riding up, and thus pressing up the cutters.

When the machine is being turned around, this caster-wheel Y performs the usual duty of a caster-wheel, in taking much of the weight and strain of the machine, and very much easing the team in turning.

This duty, a bearing-wheel, placed in the front of the shoe, would not do, whilst a caster-wheel will.

Having thus fully described my invention,



What I claim therein as new, and desire to secure by Letters Patent, is—

1. Hinging the axle-frame of a harvesting-machine, on which two driving-wheels are hung, to bearings, or bosses, through which the shaft carrying the pinions passes, and in which it turns, so that the pinions and shaft may rise and fall in the arc of a circle, of which the point of the pole, or tongue is the centre, and the pinions remain in gear with the drive-wheels, as described and represented.

2. Also, in combination with the two frames, hinged together, and controlled in the extent of their motion, by an adjustable stop, arranged between said frames, a hand-lever, for raising or lowering, or for rolling the finger-bar in the line of its advancing movement, to raise or lower the points of the guards, as and for the purpose described.

3. Also, in combination with the axle and the main frames, and a tongue, or pole, hinged to each other, the herein-described special devices, by which either, or all of said hinged joints, may be made rigid or flexible, as may be desired.

4. Also, in combination with a two-wheeled harvesting-machine, which has two frames, hinged to each other, a lever-seat, connected to both frames, and span-

ning the joint between, so that the driver in said seat may, with the lever S, raise and lower the cutting-apparatus, as and for the purpose described.

5. Also, in combination with a pitman, a pitman-connection, which will drive the cutters, when they are in working-position, and cease to drive the cutter, when the finger-bar is folded up for transportation, whilst the pitman continues to work, substantially as described.

6. In combination with a finger-bar, so hinged to the inner shoe as that it may be folded up against and carried by the main frame, a caster-wheel, carried by an arm, or support, independent of said shoe, but so that its journal, or turning-centre shall be in the line of the centres on which the finger-bar swings, and in advance of said centres, so that whilst the finger-bar is free to be folded up, the caster-wheel shall serve to roll down the grass in advance of the shoe, and serve the purpose of a caster-wheel, when the machine is being turned around, the whole being accomplished by an arrangement of devices, such as herein described and represented.

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