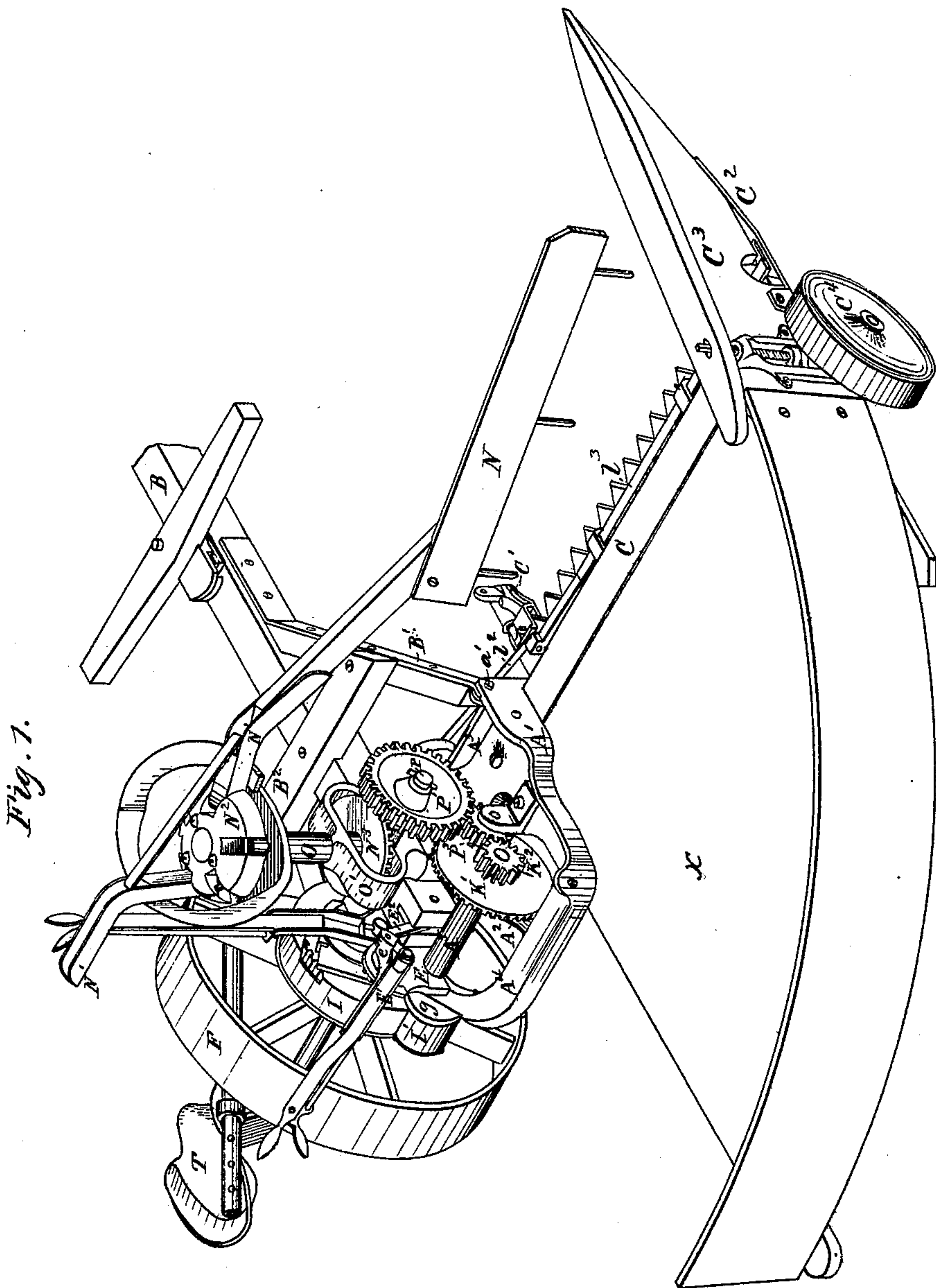


S. D. BATES.

Harvester.

No. 219,795.

Patented Sept. 23, 1879.



Witnesses:

N. A. Low.

J. S. Barker.

Inventor:

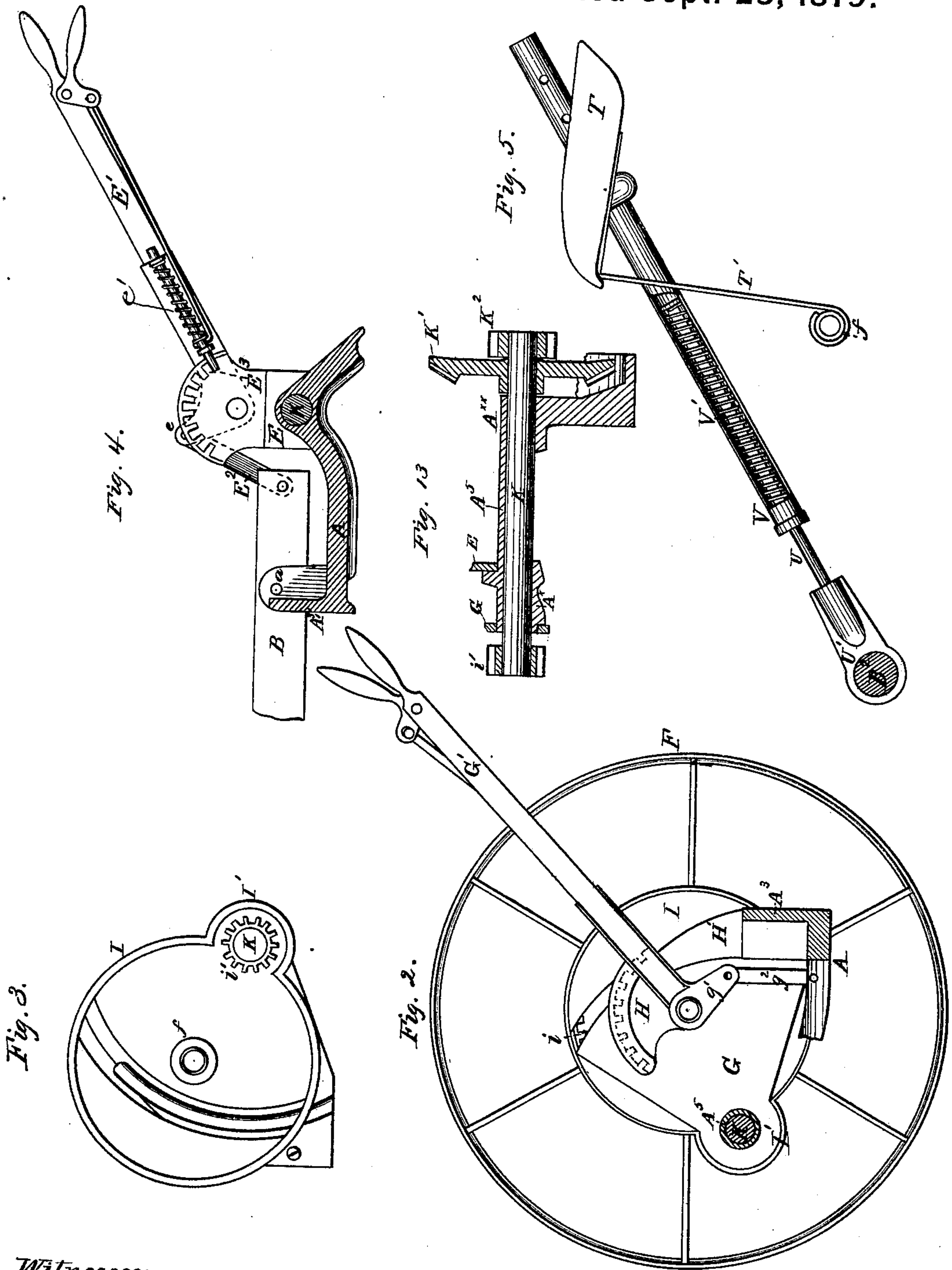
Samuel D. Bates
by H. W. Sambleday
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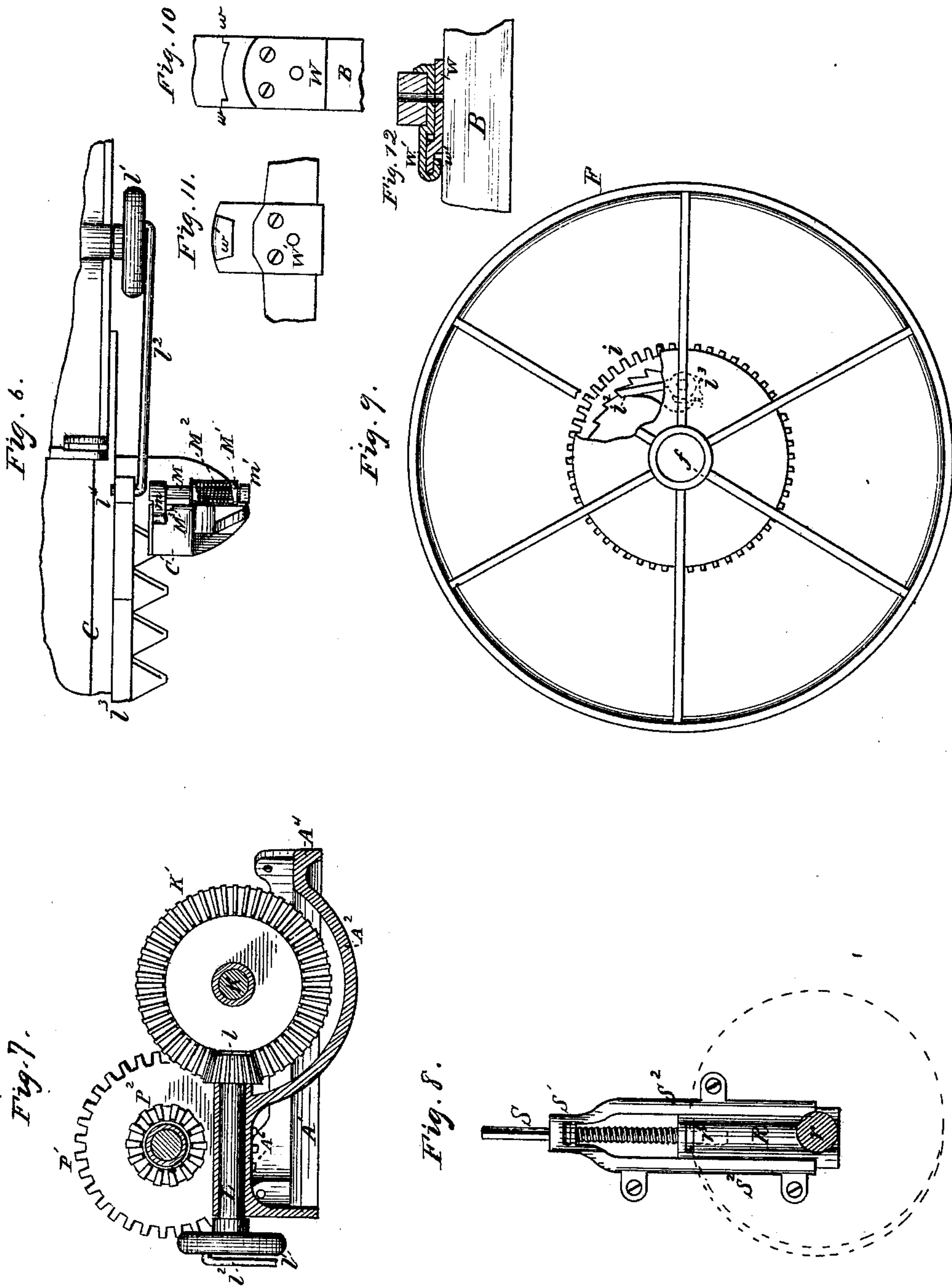
Inventor:
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UNITED STATES PATENT OFFICE.

SAMUEL D. BATES, OF LEWISBURG, PENNSYLVANIA.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **219,795**, dated September 23, 1879; application filed June 21, 1879.

To all whom it may concern:

Be it known that I, SAMUEL D. BATES, of Lewisburg, in the county of Union and State of Pennsylvania, have invented certain new and useful Improvements in Harvesting-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective of my improved harvester. Fig. 2 is a transverse section of the machine immediately inside of the devices for adjusting the main frame. Fig. 3 is an elevation of the driving-gear casing. Fig. 4 is a transverse section, showing the tilting devices. Fig. 5 is a side elevation of the driver's seat. Fig. 6 is a top-plan view of the devices for securing the pitman. Fig. 7 is a transverse section, showing the mechanism for operating the rakes and the cutters. Fig. 8 is a side elevation of the devices for adjusting the platform on the carrying-wheel. Figs. 9, 10, 11, 12, and 13 are detail views.

In the drawings, the main frame is shown as composed of an outside bar, A, an inside bar, A¹, an intermediate bar or girt, A², a front bar, A³, and a rear bar, A⁴, all of which parts may be cast in one piece.

The draft-frame is composed of the tongue B, pivoted to the front bar, A³, of the main frame at *a*, the brace B¹, pivoted to the inner front corner of the main frame at *a'*, and the cross-piece or girt B². The cross-piece B² of the draft-frame is situated in front of the driving-wheel, and it extends outside thereof to a suitable distance, to assist in supporting the driver's seat, as will be more fully explained.

The cutter-frame is permanently secured to the main frame at the inner side of the latter. It is composed of the finger-bar C, the outer shoe, C¹, the inner shoe, C², and the divider C³, and it is mounted at the inner end upon the grain-wheel C⁴.

The main frame and the cutter-frame are arranged to be tilted relative to the draft-frame by means of the following devices: E is a standard or upright attached to or formed

with the main frame upon the outside bar, A. E¹ is a tilting lever pivoted to the standard E, and carrying a rocking-arm, *e*. The tongue B is pivoted to the main frame at a point some distance from its rear end, so that said end shall project across the front bar, A³, to a point nearly in the vertical line of the arm *e*. E² is a link pivoted to the outer end of arm *e* and to the rear end of the tongue; and it will be seen that by means of the lever E¹ the cutter-frame and the main frame can be tilted or rocked upon its supporting-wheels.

The standard E and lever E¹ are provided with suitable ratchet and pawl, to hold the lever in any desired position.

F represents the main carrying and driving wheel, mounted loosely upon the main axle *f*. The main frame A A¹ A³ A⁴ is supported upon the axle of the driving-wheel by means of a quadrant-plate or intermediate frame, G, which is pivoted outside the bar A at *g*, in rear of the axle *f*, and which, near its front or curved side, is permanently secured to the axle.

The following devices serve to raise and lower the main frame and the cutter-frame relative to the main axle *f*. G' is a lifting-lever, supported upon the axle or upon an extension thereof inside the quadrant G and above the main frame. It is provided with a short arm, *g*¹, to which a link, *g*², is pivoted, which link is also pivoted to the main frame.

H is a ratcheted segment or standard secured to the quadrant G, and adapted to engage with a spring-pawl carried by lever G, and arranged to hold the lever in any desired position.

H' is a curved standard secured to the main frame, and situated in front of the quadrant G. It is formed with a groove adapted to receive and guide the quadrant.

I I' is a casing formed with or attached to the quadrant. Within the larger part I is mounted the spur-wheel *i*, which drives the various parts of the mechanism; and within the part I' is mounted a spur-pinion, *i*¹, meshing with the wheel *i*.

The quadrant G vibrates about the axis of pinion *i*¹.

It will now be seen that by means of lever G' the main frame and finger-bar frame can be elevated or lowered relative to the main axle,

and that by means of the parts G I I' the driving and the driven parts will be in constant engagement; and, moreover, that combining in the manner described the lifting-lever G', permanently pivoted in reach of the operator, with the main-frame, the axle, and the quadrant or intermediate frame G pivoted to both axle and main frame around the shaft K, I have overcome the difficulties met with in attempting to construct one-wheeled harvesters (similar to that shown) so that their main frames could be readily raised or lowered.

It will be further seen that I have attached the lifting-lever at a fixed point (which is a greatly desirable matter) by pivoting it to the axle, which is projected inward to receive it.

In order to hold the lever in any position, I attach the ratchet H rigidly to the axle, and to the quadrant or intermediate frame G, and thus I avoid the necessity of the supplemental devices hitherto employed, which are attached to the main frame or the tongue-frame, being able to mount both lever and ratchet together at a fixed point on the axle.

The spur-wheel *i* is loose upon the axle *f*, and is provided with ratchet-teeth adapted to engage with a spring-pawl, *i*², carried by a plate, *i*³, secured to the main wheel F. Pinion *i*¹ rotates the driving-shaft K, which is mounted in the journal boxes or bearings A^x and A^x^x on a line in rear of the axle of the driving-wheel, and carries at its inner end a bevel-wheel, K¹, for operating the cutters, and a spur-wheel, K², for driving the rake.

L is a crank-shaft mounted in the box A⁶, carrying at its rear end a bevel-pinion, *l*, meshing with bevel-wheel K¹, and at its front end it carries the crank-wheel *l*¹, to which is attached the pitman *l*², which reciprocates the cutter-bar *l*³. The end of the pitman is inserted in the eye of the cutter-bar, as shown at *l*⁴, and, in order to permit its being readily attached and detached, I combine with it the following devices.

M is a rod having a large eccentric head, *m*, at the rear end, and a head, *m*¹, at the front end. This rod is mounted and adapted to rotate and reciprocate in a box or casing, M¹, which is secured to the upper face of the outer shoe, C¹.

M² is a coiled spring situated in the casing M¹, and arranged to bear against the rod M so as to thrust it toward the pitman *l*², the rod being mounted in or near the line of the pitman's attachment to the cutter-bar. The head *m* comes sufficiently near to prevent escape of the pitman, and yet allows it (the pitman) to be removed, but does not interfere with it in its movements.

When it is desired to remove the pitman the rod M is drawn outward, and it is held out by means of a stop, M³, until the pitman is replaced.

By mounting the lock at a stationary point, (as upon the shoe,) and by arranging it so as to bear directly toward the pitman, and so that it can reciprocate longitudinally, I avoid

the necessity of many of the devices required when the lock is attached to the pitman or cutter-bar, and also of the space required, if the lock be hinged or pivoted, so as to swing laterally or vertically. If the lock be arranged with a spring beneath it, it occupies much room vertically, and tends to clog with straw and stubble.

N represents the rakes attached to an arm, N¹, which is pivoted to a rake-head, N². The rake-head is secured to a vertical shaft, which is mounted in the standard or frame O O', and carries at its lower end a bevel-wheel, N³.

P is a short shaft projecting from the standards O O', and upon it are mounted the spur-wheel P¹ and the bevel-pinion P², secured together, the bevel-pinion P² meshing with the wheel N³. Wheel P¹ receives its motion from the pinion K² on shaft K through an intermediate idler-pulley, P³.

C⁴ is the grain-wheel. It is mounted on the stud-shaft *r*, and is arranged so as to readily adjust the platform to any desired distance from the ground.

The stud-shaft *r* is rigidly secured to a slide, R, which is provided either with a screw-threaded vertical aperture or with a nut, as shown at *r*¹.

S is a screw-rod supported in a bracket, S¹, secured to the platform, and the rod is prevented from reciprocating by means of a collar or other suitable device. It engages with the sliding support R of the grain-wheel, and by turning the rod S the platform can be raised or lowered to the desired position. The bracket S¹ is cast with the legs S² S², adapted to retain the slide R in proper position and to guide it in its vertical movements. The screw-rod is squared at its upper end, so that it can be readily operated by a key or wrench.

T is the driver's seat. It is hinged to the main axle *f*, or to an extension thereof, outside of the driving-wheel F, by means of the vertical support T¹, which is arranged to have more or less play around the axle.

U is a rod, mounted loosely upon the girt or cross-piece B² of the tongue-frame by means of an enlarged head, U¹. V is a pipe, into the lower end of which the rod U is inserted, and which is hinged to the side of the driver's seat, near its upper end. V¹ is a coiled spring placed around rod U within the pipe V, and arranged to hold the pipe forward and downward, but to form a flexible connection between the pipe and rod. When thus mounted the seat is firmly supported, but at the same time is permitted to have all desirable movements.

The pipe is provided with several perforations, so that the point of hinging to the seat can be varied, as may be desired.

In order to construct a self-raking reaper of the character shown in as compact form as possible, it is necessary to so arrange the parts that the rakes while in operation come in close proximity to one of the horses; and to prevent the horse from coming in contact with the rake,

I attach the double-tree to the tongue in the following manner: W, Fig. 10, represents a plate, which is secured to the tongue B, and which has a recess formed in its rear end, and ears *w w* at the rear corners. W' is a plate secured to the double-tree, and provided at the rear end with a downwardly and forwardly curved lip, *w'*. When the double-tree is attached to the tongue the plate W' lies upon the plate W, and the lip *w'* is inserted in the recess in plate W, so that the double-tree can oscillate to a limited extent around the bolt, but not far enough to permit the off horse to come into the path of the rake, the extent of the movement being limited by the ears *w w*, and it will be seen that by devices constructed and arranged as described, the horse that is nearer the rake will be checked in any backward movement to which he may be liable and be prevented from getting back beyond a limited extent.

X represents the grain-platform. It is made of paper prepared to be sufficiently strong and durable and to resist the action of the elements.

A⁵ represents a brace cast in one piece with the boxes A^x and A^{xx}, and arranged to prevent any bending or sagging of the frame or any cramping or binding of the shaft K in its bearings.

I am aware that sleeves and sleeve-bearings have been heretofore used, and I do not wish to be understood as claiming such devices as my invention; but I have found that a harvester-frame of the construction I have shown and described herein is liable to sag or bend on lines between the journals A^x and A^{xx} of shaft K; and I have further found that a brace similar to that shown at A⁵, Fig. 13, cast in one piece with said journals, effectually obviates the objections named, but that a sleeve formed apart from the journals and placed around the shaft and between the journals does not materially strengthen the frame; nor do I claim in this application either the devices which I have shown for transmitting power from the pinion-shaft to the raking apparatus or a grain-platform constructed of paper, as I have prepared, and am about to file, a separate application, in which I claim as my invention said device and platform.

What I claim is—

1. In a harvester, the combination of a main carrying and driving wheel, a main driving or pinion shaft rotated by said carrying and driving wheel, and mounted in rear of the axle of said carrying-wheel, an intermediate plate or frame which vibrates about the axis of the carrying and driving wheel, a main frame connected with said intermediate frame by pivotal connection on a line in rear of the main axle, and vibrating about the axis of the driving or pinion shaft, and a lifting-lever pivoted in front of said driving-shaft and con-

nected with and supporting the front part of the main frame, substantially as set forth.

2. In a one-wheeled harvester, the combination, with the main frame and the main axle, of a lifting-lever pivoted on said axle, and arranged to support the main frame, substantially as set forth.

3. In combination with the main carrying and driving wheel, the main driving or pinion shaft, an intermediate plate or frame vibrating about the axis of the driving-wheel, the main frame hinged to said intermediate plate or frame, and the lifting-lever pivoted upon the axle, a ratchet arranged to engage with the lifting-lever and attached to the axle rigidly, whereby it is made stationary relatively to the axis about which the lifting-lever vibrates, substantially as set forth.

4. In a harvester, a main frame upon which is mounted the driving-gear, and which is arranged, substantially as set forth, to support at its inner side the raking apparatus and grain-platform, and at its outer side the driving-wheel in vertical position, and having bearings for the driving-shaft arranged on a line transverse to the inner side and the outer side of the main frame, in combination with a brace, A⁵, rigidly attached to or formed with said frame, substantially as set forth.

5. In combination with the driver's seat mounted upon the axle loosely, whereby it can rotate by the weight of the driver, a spring secured at one end to the machine at a point stationary relatively to the seat, and arranged substantially as set forth, to return the seat, to its normal position.

6. In combination with the driver's seat, mounted upon the axle loosely, whereby it can rotate by the weight of the driver, a brace pivoted to the seat or seat-support at a point above the axle, and constructed of two parts connected together by a spring, whereby the parts of the brace are made to slide longitudinally relatively to each other, substantially as set forth.

7. In combination with the cutter-bar and the pitman, a longitudinally-reciprocating lock, a spring, and a stop, whereby the lock is held against or away from the pitman, substantially as set forth.

8. In a harvester, the combination, with the cutter-bar and the raking apparatus, both mounted in front of the axle of the carrying and driving wheel, the tongue and the double-tree, of the stopping-plates W and W', constructed and arranged as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

SAMUEL D. BATES.

Witnesses:

H. H. BLISS,
N. P. CALLAN.