No. 808,069. PATENTED DEC. 26, 1905.

J. T. BUTLER & W. G. FELKNER.

COTTON CHOPPER.

APPLICATION FILED MAR. 29, 1905.

3 SHEETS—SHEET 1.

Fig. 8.

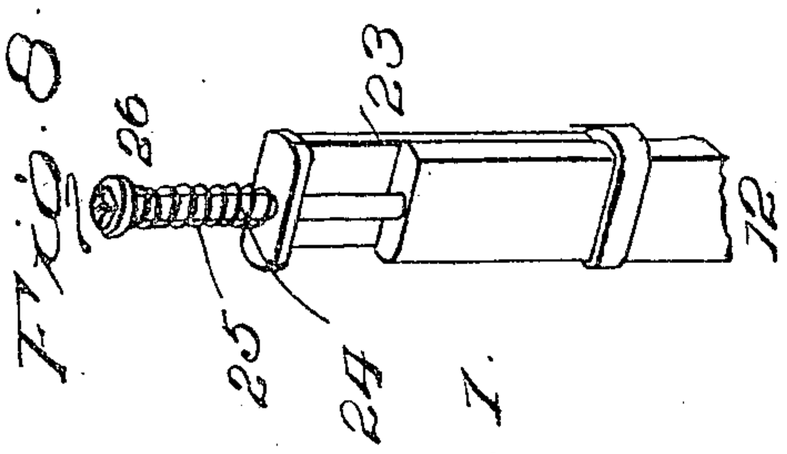


Fig. 7.

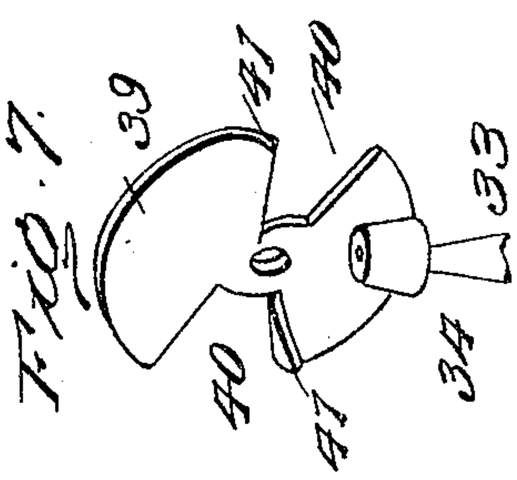
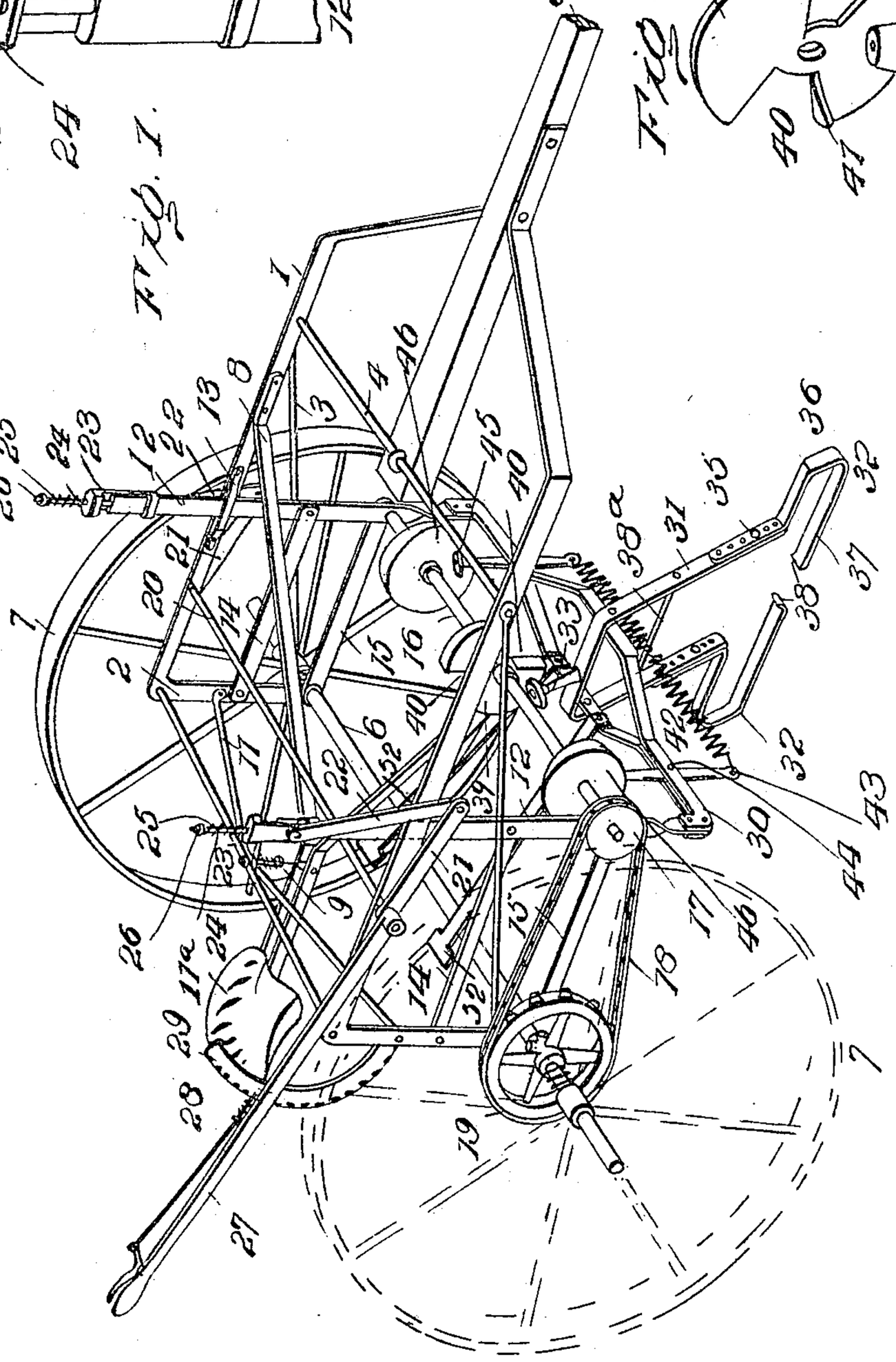


Fig. 1.



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3 SHEETS—SHEET 2.

FIG. 2.

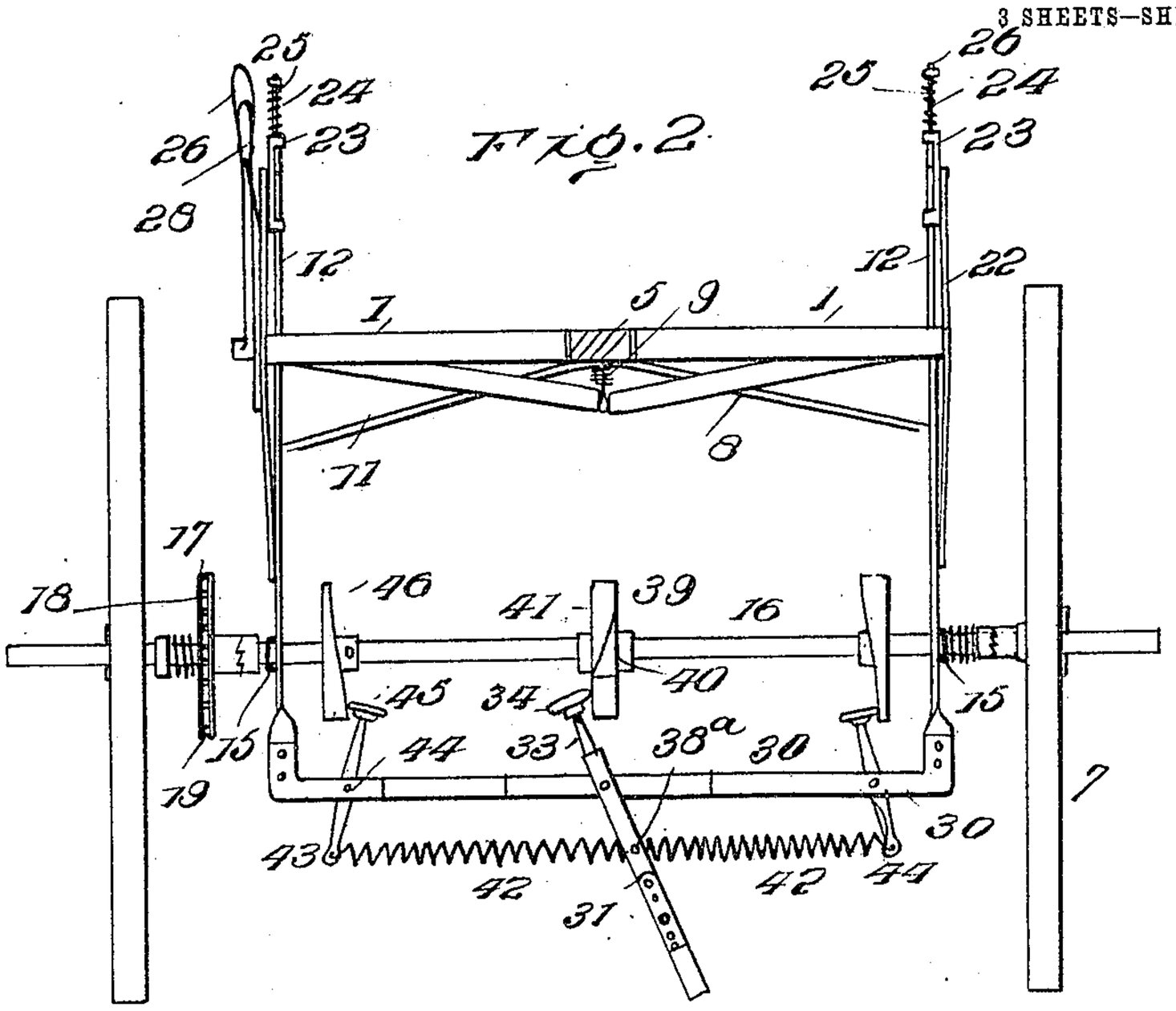
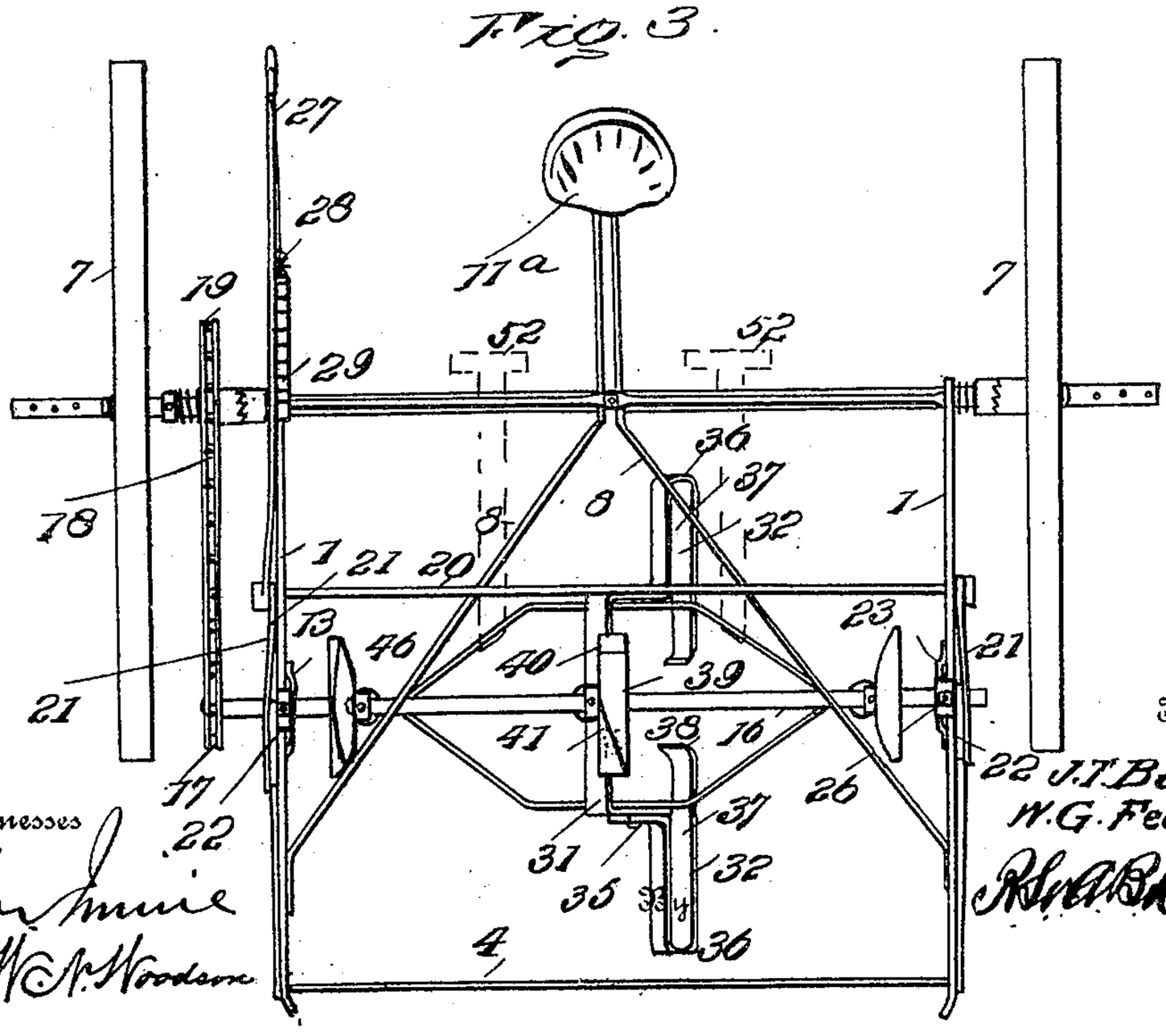


FIG. 3.



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3 SHEETS—SHEET 3.

FIG. 4.

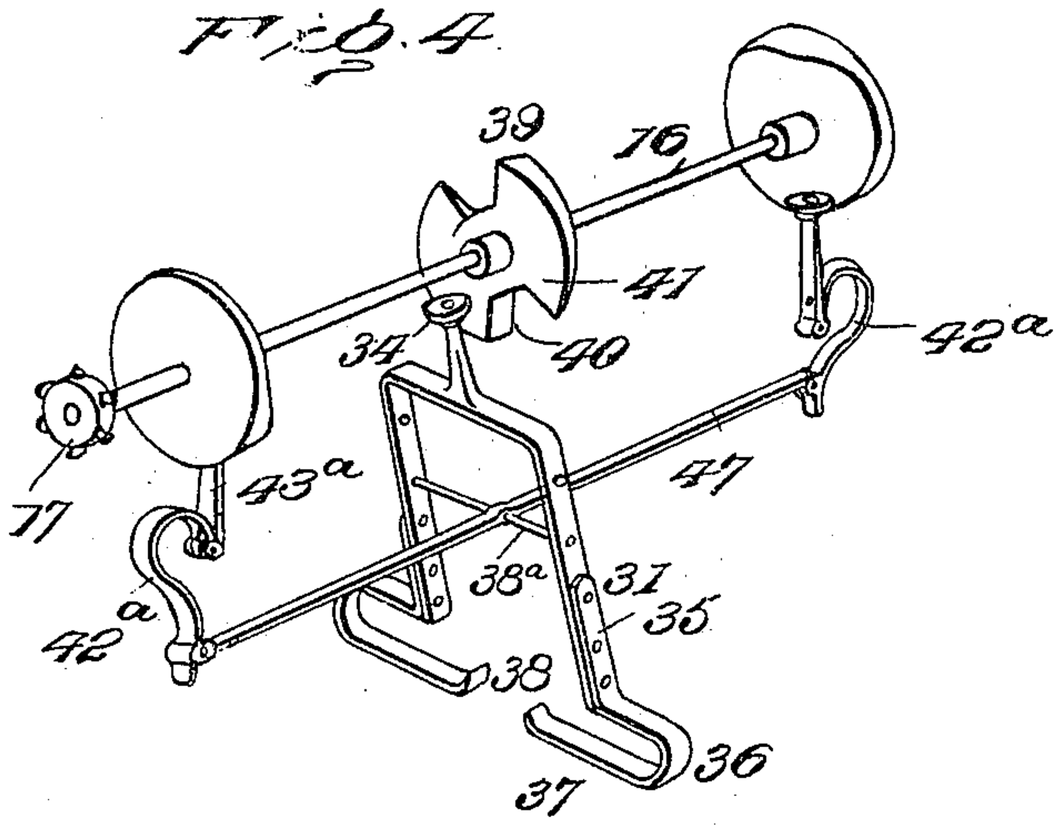

FIG. 5.

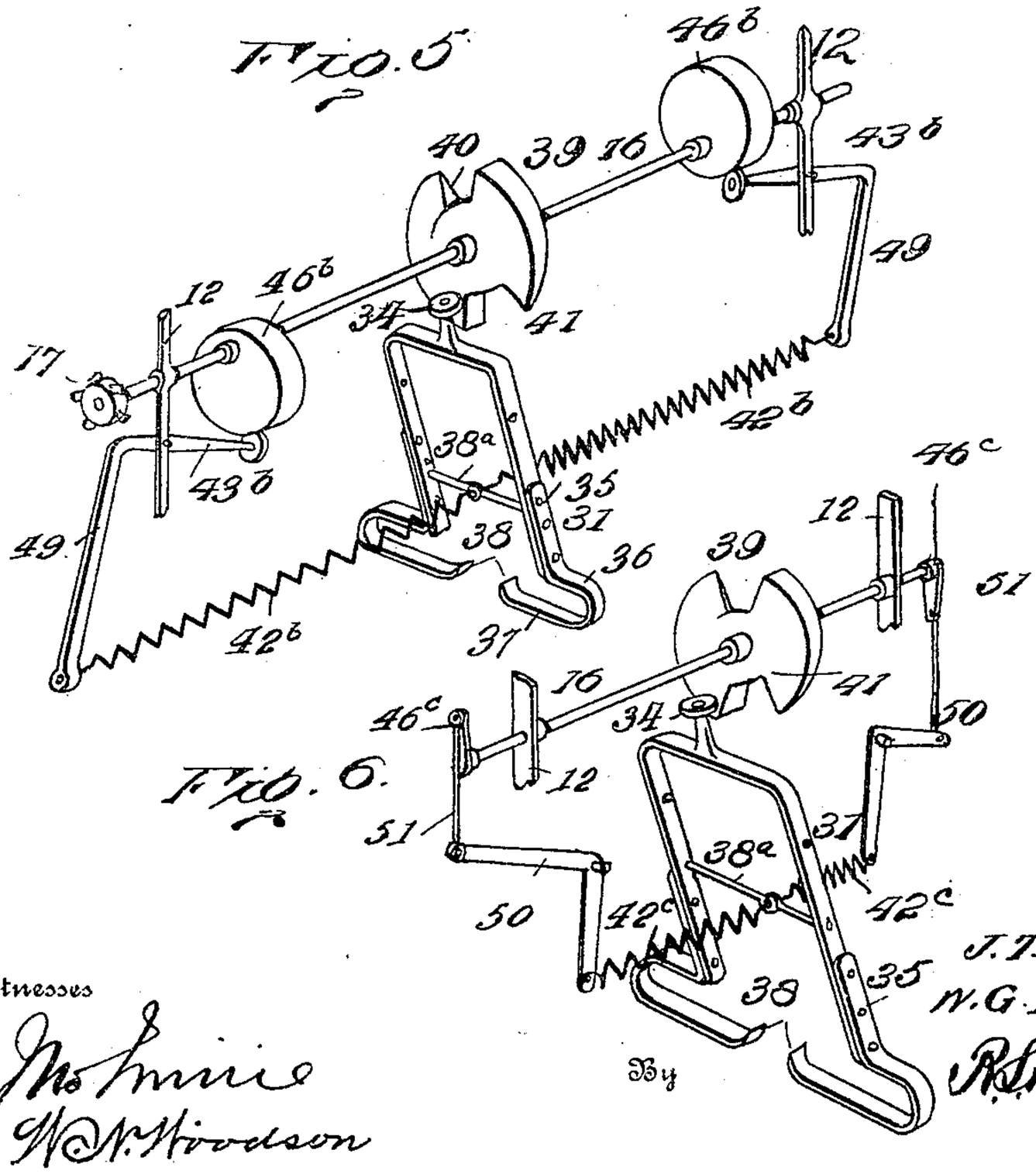

FIG. 6.

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UNITED STATES PATENT OFFICE.

JAMES T. BUTLER AND WILLIAM G. FELKNER, OF VINEYARD, TEXAS.

COTTON-CHOPPER.

No. 808,069. Specification of Letters Patent. Patented Dec. 26, 1905.

Application filed March 29, 1905. Serial No. 252,760.

To all whom it may concern:

Be it known that we, JAMES T. BUTLER and WILLIAM G. FELKNER, citizens of the United States, residing at Vineyard, in the county of Jack and State of Texas, have invented certain new and useful Improvements in Cotton-Choppers, of which the following is a specification.

This invention relates to plant-thinning machinery such as used for chopping rows of cotton, corn, and the like to provide ample space between those plants desired to mature in order to obtain a plenteous harvest, all other conditions being favorable.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a perspective view of a cotton-chopper embodying the invention. Fig. 2 is a front view of the machine, the tongue being in section. Fig. 3 is a top plan view of the machine, the tongue being omitted. Figs. 4, 5, and 6 are perspective views of modifications. Fig. 7 is a detail view of a modified form of tappet-wheel and coöperating anti-friction-wheel. Fig. 8 is a detail view of the upper end portion of a vertical bar and the coöperating slide and spring on a larger scale.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The machine-frame comprises longitudinal bars 1, vertical bars 2, braces 3, and cross-rod 4. The front portions of the bars 1 are inclined inwardly and are lapped against opposite sides of the pole or tongue 5 and are secured thereto, said pole being attached at its rear end to the cross-rod 4. The axle 6 is loosely mounted in bearings at the lower ends of the vertical bars 2, and the ground-wheels 7 are connected thereto in a manner to impart rotation thereto in the operation of the machine and are adjustable laterally to adapt the machine to varying distances between rows of plants to be straddled. One of the ground-wheels is fast to the axle 6, whereas the other has the usual ratchet connection therewith to admit of the ground-wheels moving at different relative speeds, as when making a turn.

Seat-bars 8 are loosely connected at their front ends to the longitudinal bars 1 and are rearwardly converged and are connected, by means of a spring-clevis 9, with a cross rod or bar 10, uniting the rear ends of the longitudinal bars 1 and strengthened by means of a brace 11. A seat 11^a is provided upon the rear ends of the bars 8. By having the seat 11^a located in the rear of the axle it serves in a measure to counterbalance the machine, particularly when the driver is mounted thereon.

Vertical bars 12 are located upon opposite sides of the machine and are directed in their vertical movements by means of keepers 13 and bars 14 and 15. The bars 15 have loose connection with the axle 6 and are similarly connected to the bars 12. The bars 14 are parallel with the respective bars 15 and are pivotally connected to the bars 2 and 12. As a result of the arrangement and connection of the several bars the parts 12, 14, 15, and 2 have a relative parallelogrammatic movement. Hence the bars 12 at all stages of their movement remain parallel to a given position. A shaft 16 extends parallel with the axle 6 and is driven therefrom and is journaled in bearings at the lower ends of the vertical bars 12. A sprocket-wheel 17, fast to the shaft 16, is connected, by means of a sprocket-chain 18, to a sprocket-wheel 19, having ratchet connection with the axle 6, whereby upon forward rotation of the axle the shaft 16 will remain stationary. The chopping mechanism and its operating means are supported by means of the bars 12 and are adjustable vertically therewith.

The following means have been devised for adjusting the bars 12 and holding them in the located position. A shaft 20, parallel with the axle 6, is mounted in the longitudinal bars 1, and its end portions are bent or otherwise provided with crank-arms 21, which are connected, by means of links 22, with the bars 12 through the intervention of slides 23 and springs 24. The upper ends of the bars 12 are reduced, as shown at 25, and their extremities are provided with taps or adjustable stops 26, between which and the slides 23 are confined the springs 24. The slides 23 have upper and lower portions fitted upon, respectively, the reduced portions 25 and the upper ends of the bars 12, the links or like parts 22 having pivotal connection with said slides. As a result of the peculiar connection between the bars 12 and the links 22 said bars are adapted to have a limited movement to permit of the chopping mechanism yielding when

coming in contact with an obstruction, thereby obviating serious injury to the machine. A lever 27 is connected to the shaft 20 and extends within convenient reach of the driver's seat 11 and is provided with the usual latch 28 for coöperation with the notched segment 29 to hold the parts in an adjusted position.

A frame 30 is supported by means of the vertical bars 12 and is attached to the lower ends thereof and comprises companion bars having their end portions brought close together to the lower ends of the bars 12, the middle portions of the companion bars being oppositely deflected or spaced. The frame 30 may be of any construction so long as it serves to provide a support for the pivoted frame 31, carrying the chopping-blades 32. The frame 31 is approximately of **U** form, the closed end being uppermost and provided with an arm 33, supplied with an antifriction-wheel 34. The chopping-blades 32 are of like formation and have adjustable connection with the lower ends of the legs or bars of the pivoted frame 31. Each chopping-blade has a shank 35, adapted to be placed alongside a leg or member of the frame 31, a curved arm 36, and a blade 37, the latter being spaced from the arm 36 and having an upturned end 38. The blade 37 is longer than the arm 36, thereby admitting of the upturned end 38 projecting some distance beyond the shank 35. When the chopping-blades are in position, they have an opposite arrangement, and a space is left between their upturned or bent ends 38, corresponding to the plant or clump to be left standing. A tie-rod 38^a connects the members of the pivoted frame 31. The frame 31 is centrally disposed and is pivoted at or near its upper end to the frame 30 and in practice receives an oscillatory movement, whereby the chopping-blades are moved across the line or row of plants to be thinned, so as to chop or destroy the plants between those to be left standing.

A tappet-wheel 39 is secured to the shaft 16 for rotation therewith and is provided in its periphery with notches 40 for the upper end of the arm 33 to pass through from one side of the wheel to the other. The portion of the tappet-wheel between adjacent notches 40 is inclined, so as to form a cam, whereby the pivoted frame 31 is positively oscillated from one side to the other. The inclined portions 41 are alternately arranged from right to left and left to right, whereby the pivoted frame is positively moved in each direction. The number of notches 40 and cam portions is immaterial within the scope of the invention and may be varied to meet different conditions and requirements. The notches 40 permit the antifriction-wheel 34 and the upper end of the arm 33 to clear opposite sides of the tappet-wheel and to return into the path of the next cam after clearing the preceding cam.

Tension-springs 42 are located upon opposite sides of the pivoted frame 31 and are connected at one end to the cross-rod 38^a and at their outer ends to pivoted arms 43, attached by pivot-fastenings 44 to the supporting-frame 30. The upper ends of the pivoted arms 43 are provided with antifriction-wheels 45, which bear against cams 46, attached to the shaft 16 and rotatable therewith. The cams 46 are arranged to operate the arms 43 in alternation, the movement taking place the instant the pivoted frame 31 clears a cam portion of the tappet-wheel 39, so as to move said pivoted frame to bring its upper end or the antifriction-wheel 34 in position to be engaged by the next succeeding cam portion of the tappet-wheel, whereby the pivoted frame is positively thrown in the opposite direction. The cams 46, pivoted frame 43, and springs 42 constitute, in effect, a setting mechanism for properly positioning the cutting mechanism at the end of each stroke, so as to insure its positive movement in the opposite direction. The setting mechanism may be variously constructed, as shown in Figs. 4, 5, and 6. As illustrated in Fig. 4, pivoted arms 43^a are provided with springs 42^a of approximately **S** form and which are connected to the cross-rod 38^a of the pivoted frame by means of a rod or connection 47. As shown in Fig. 5, the pivoted arms 43^b have an approximately horizontal arrangement, and the cams 46^b, secured to the shaft 16, are eccentrics. The arms 43^b are provided with extensions 49, which are connected, by means of springs 42^b, with the pivoted frame. In the construction shown in Fig. 6 cranks 46^c are attached to the shafts 16, and bell-cranks 50 are interposed between the pivoted frame and said cranks, one arm of the bell-cranks being attached by a link 51 to the coöperating crank and the other arm being connected, by means of a spring 42^c, with the pivoted frame.

The tappet-wheel 39 (shown in Fig. 7) is formed of comparatively thin sheet metal, parts bordering upon the notches being bent to form the inclines 41. The antifriction-wheel 34 may be of any construction, and, as shown in Fig. 7, it is of frusto-conical form, which is preferable.

In Fig. 3 foot-rests 52 are shown, the same being attached to the frame 30 and extending within convenient reach to receive the feet of the rider when mounted upon the seat 11^a. By pushing down on the foot-rests 52 the springs 24 are compressed and the mechanism forced into low places, and in the event of the machine striking an obstruction the bars 12 have a play in the slides 23, so as to admit of the mechanism riding thereover.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a cotton-chopper, the combination of the machine-frame, upright bars, chopping mechanism connected with said upright bars,

a shaft having cranks, and yieldable connections between said cranks and upright bars for adjusting the latter vertically and admitting of the chopping mechanism yielding when meeting with an obstruction.

2. In a cotton-chopper, the combination of a frame, upright bars, a chopping mechanism connected therewith, a shaft provided with cranks, slides mounted upon said upright bars and connected with tbe cranks, and springs interposed between said slides and upright bars for transmitting movement to the latter.

3. In a cotton-chopper, the combination of the frame, upright bars having reduced portions, slides mounted upon said bars and the reduced parts thereof, springs mounted upon the reduced parts of said upright bars and confined thereon and adapted to transmit motion thereto from the slides, a shaft having cranks, and connecting means between said cranks and slides.

4. In a cotton-chopper, the combination of the machine-frame, upright bars, parallel bars connecting the upright bars with parts of the machine-frame to provide a parallelogrammatic movement of said upright bars in their adjustment, chopping mechanism connected with said upright bars, a shaft having cranks, and a yielding connection between said cranks and upright bars.

5. In a cotton-chopper, the combination of a pivoted frame, actuating means for oscillating the same, and chopping-blades carried by members of said pivoted frame, each consisting of a blade and a spaced arm, the ends of the blades being spaced apart.

6. In a cotton-chopper, the combination of a pivoted frame, actuating means for oscillating the same, and chopping-blades carried by members of said pivoted frame, each consisting of a blade and a spaced arm, the ends of the blades being spaced apart and upturned and projecting beyond the inner ends of the arms of the blades.

7. In a cotton-chopper, the combination of a pivoted frame provided with chopping mechanism, and a tappet-wheel for positively oscillating the pivoted frame in each direction, having notches in its periphery to admit of the coöperating part moving from one side to the other of the tappet-wheel in the operation of the machine.

8. In a cotton-chopper, the combination of a pivoted frame provided with chopping mechanism, and a tappet-wheel for positively oscillating the pivoted frame in each direction, said tappet-wheel having notches in its periphery and having the side portion between adjacent notches inclined to form a cam, the cam portions having an alternate arrangement whereby the pivoted frame is positively moved in each direction.

9. In a cotton-chopper, the combination of a pivoted frame provided with chopping mechanism, a tappet-wheel for positively oscillating the pivoted frame in each direction, said tappet-wheel having notches in its periphery and having the side portion between adjacent notches inclined to form a cam, the cam portions having an alternate arrangement, whereby the pivoted frame is positively moved in each direction, and a setting mechanism cooperating with the pivoted frame for giving an initial movement thereto upon the return stroke to insure positive engagement of the succeeding cam portion of the tappet-wheel with the pivoted frame.

10. In a cotton-chopper, the combination of a pivoted frame provided with chopping mechanism, a tappet-wheel having oppositely-disposed cam portions for positively moving the pivot-frame in each direction, a pivoted arm, a spring connection between said pivoted arm and pivoted frame, and a cam for operating the pivoted arm for tensioning said spring to insure initial movement of the pivoted frame upon its return stroke, substantially as set forth.

11. In combination, a pivoted frame provided with chopping mechanism, pivoted arms at opposite sides of the pivoted frame, a spring connection between the pivoted arms and pivoted frame, a shaft, a tappet-wheel fast to said shaft for positively actuating the pivoted frame in each direction, and cams fast to said shaft for positively operating the pivoted arms to tension the springs coöperating therewith to insure positive initial movement of the pivoted frame upon its return stroke.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES T. BUTLER. [L. S.]
WILLIAM G. FELKNER. [L. S.]

Witnesses:
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WILLIAM G. POUNDS.