(No Model.) 2 Sheets—Sheet 1.

J. I. DUNLAP.

COTTON CHOPPER.

No. 559,938. Patented May 12, 1896.

Fig. 1.

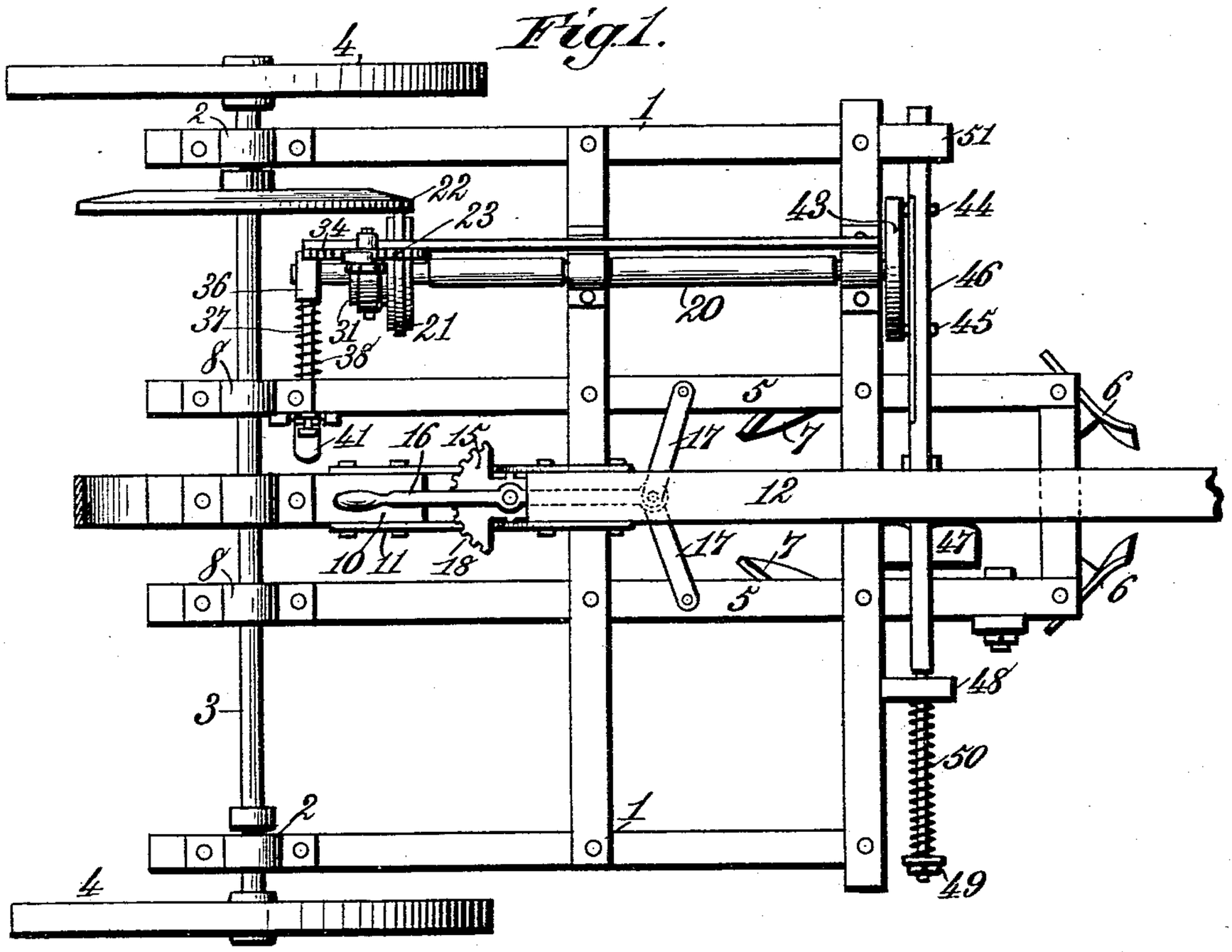
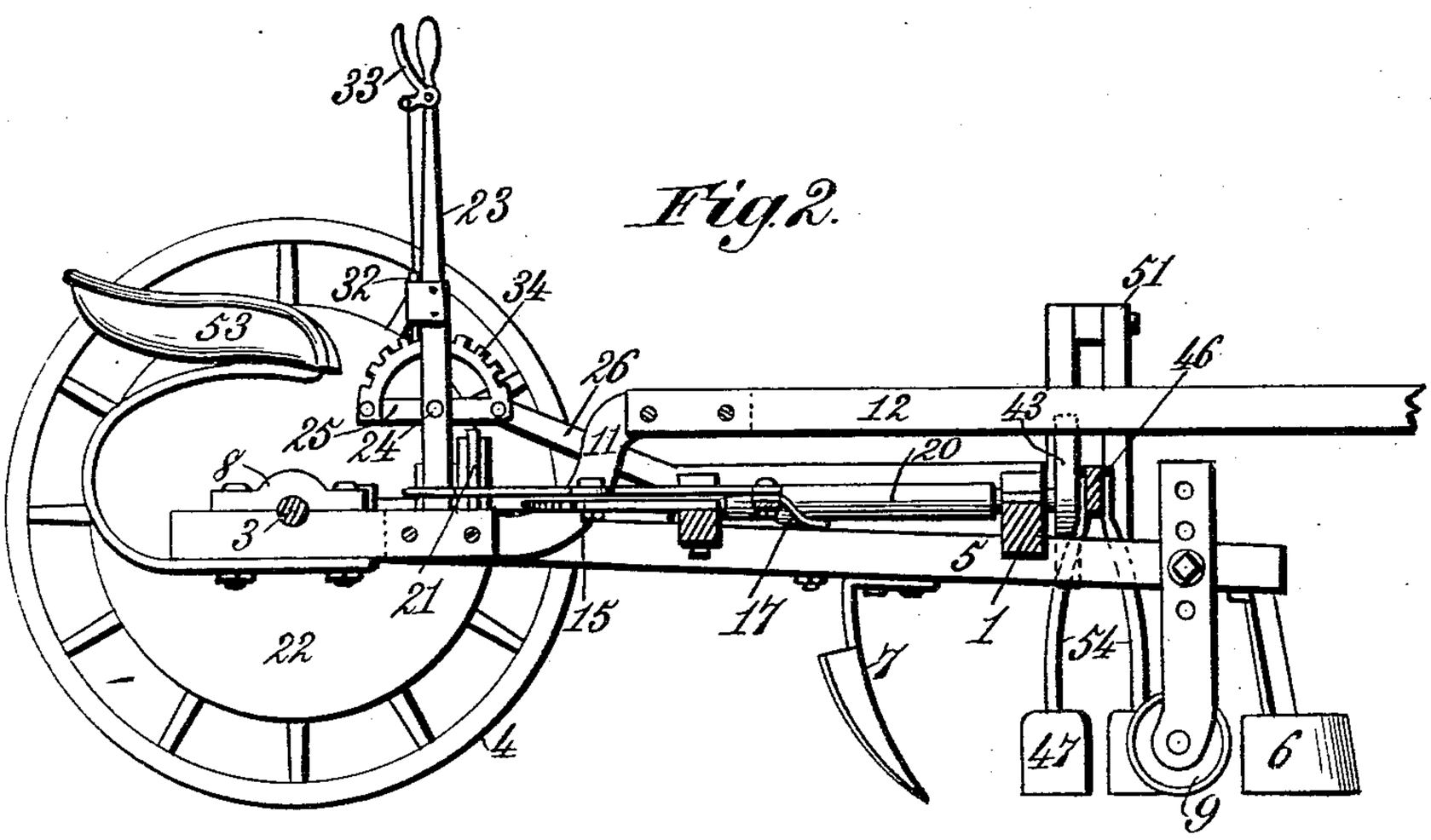


Fig. 2.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

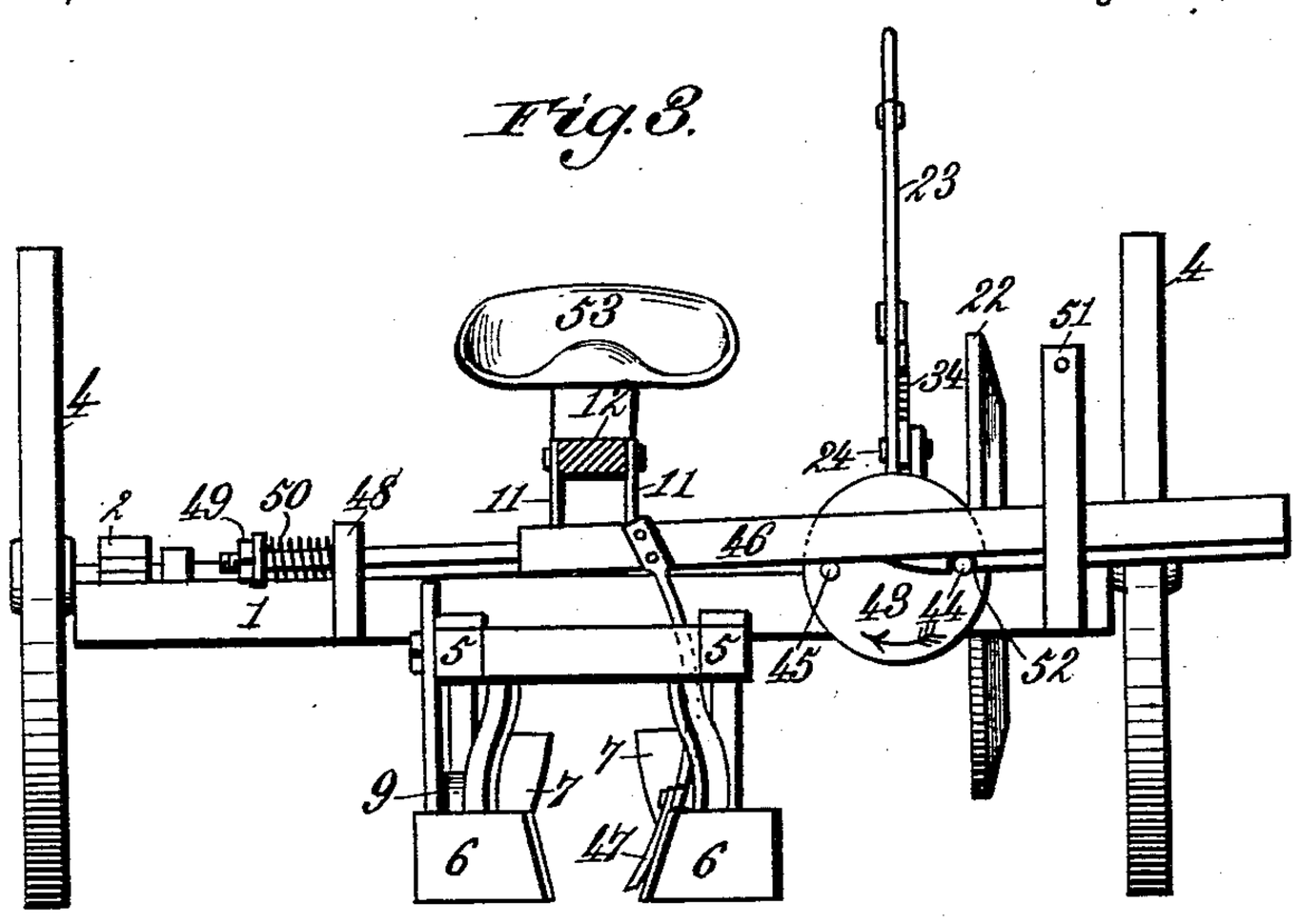


Fig. 5.

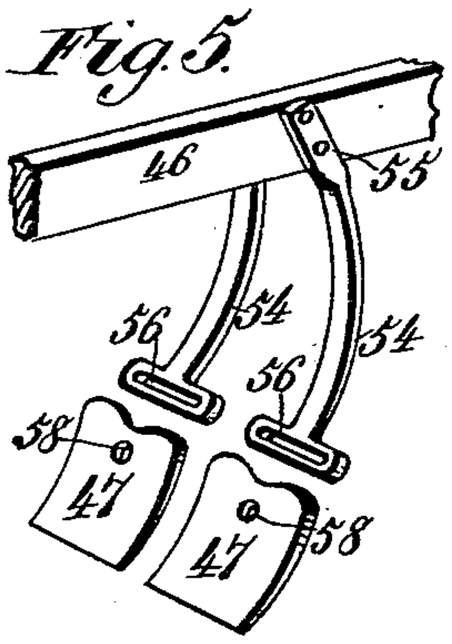


Fig. 4.

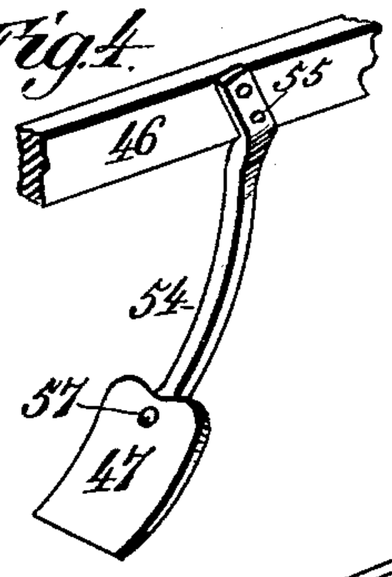


Fig. 6.

Fig. 7.

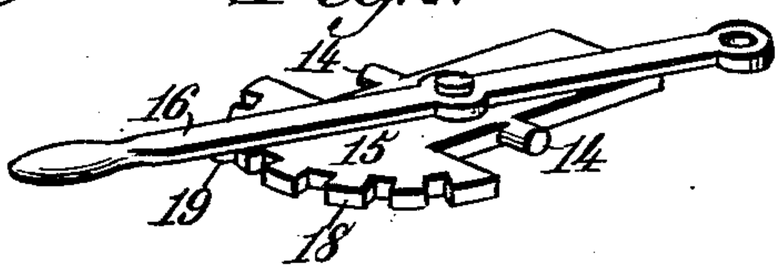


Fig. 8.

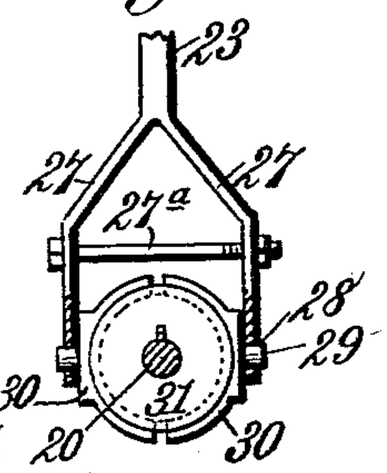
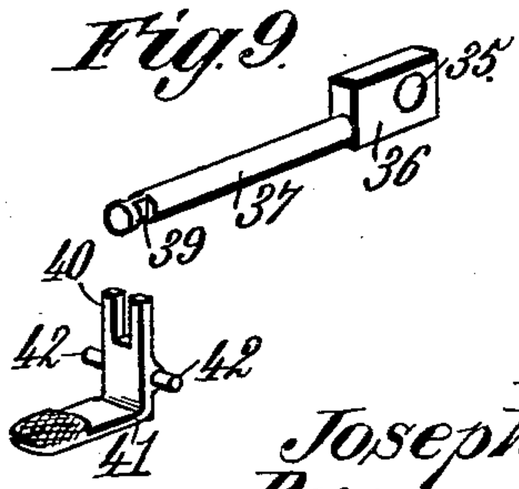


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOSEPH I. DUNLAP, OF WADESBOROUGH, NORTH CAROLINA.

COTTON-CHOPPER.

SPECIFICATION forming part of Letters Patent No. 559,938, dated May 12, 1896.

Application filed October 3, 1895. Serial No. 564,531. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH I. DUNLAP, a citizen of the United States, residing at Wadesborough, in the county of Anson and State of North Carolina, have invented new and useful Improvements in Cotton-Choppers, of which the following is a specification.

The object of this invention is to improve the construction and facilitate the operation of that class of cotton-choppers in which the chopping mechanism is actuated in approximately an elliptical path at right angles to and across the row of plants; and the invention consists in features of construction and novel combinations of parts in a cotton-chopper, as hereinafter more particularly described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a plan of a cotton-chopper embodying my improvements. Fig. 2 is a partly-sectional side elevation of the same. Fig. 3 is a front end elevation of the machine. Fig. 4 is a view of the chopper-carrying bar with one hoe attached. Fig. 5 is a view of the same with two hoes adjustable toward and from each other. Fig. 6 is a detail view of the tongue. Fig. 7 is a detail view of the oscillatory toothed segment-plate and attached lever to be mounted on the tongue and connected with the machine-frame for shifting the same to one or the other side of the line of draft. Fig. 8 is a detail view of lever connections for changing the speed of the chopping mechanism. Fig. 9 is a view of the foot-lever for throwing the chopper-actuating mechanism out of operation.

Referring to the drawings, the numeral 1 designates the main frame of the machine, having journaled in bearings 2 at its rear end a main drive shaft or axle 3, on the ends of which are wheels 4, that may be mounted in such manner as to have a free backward movement, as usual in harvesting-machines.

The numeral 5 designates a double cultivator beam or frame, to which the usual scrapers 6 and cultivators 7 may be attached. The rear end of this frame or beam 5 is mounted on the central portion of the shaft or axle 3 by means of suitable bearings 8, and the forward end of said beam or frame is provided with a caster-wheel 9, having, preferably, a vertical adjustment.

There is mounted on the center of the main drive shaft or axle 3, between the side bars of the double beam 5, a tongue-stub 10, the forward end of which is firmly connected by approximately **S**-shaped strap-irons 11 to the rear end of the tongue 12, the forward portion of which is thus given the required elevation. In the two parallel strap-irons 11 are openings 13, in which are journaled the pivots or trunnions 14 of a vertically-oscillatory segment-plate 15, having a hand-lever 16 pivoted thereto. The forward end of this lever 16 is connected by links 17 to the side bars of the double cultivator beam or frame.

On the rear end of the segment-plate 15 is a series of teeth 18 for engagement with the usual spring-latch 19 on the lever 16 to lock said plate and lever together. By this construction the segment-plate 15 may be vertically oscillated on its trunnions 14 between the straps 11, and when the spring-latch 19 is disengaged from the teeth 18 the lever 16 may be oscillated laterally on the said segment-plate, so that by swinging said lever to one side or the other the frame of the machine will be correspondingly thrown to one or the other side of the line of draft. It will be understood that the rear end of the tongue is pivotally connected with the axle, so that the machine may follow the inequalities of the ground without affecting the position of the tongue, and it will be evident that by mounting the oscillatory segment-plate 15 between the straps 11 and pivoting the lever 16 on said plate in a line with the pivot of the tongue and in its central longitudinal axis the operation of the lever 16 in shifting the frame will be greatly facilitated.

In one side of the frame 1 there is mounted a longitudinally-arranged shaft 20, having a friction-wheel 21 splined thereon. A friction-disk 22 is rigidly mounted on the main shaft or axle 3 in position to be engaged by the friction-wheel 21, which is adjustable on its shaft 20 toward and from the center of the friction-disk 22, so as to vary the speed with which the said friction-wheel may be revolved by its contact with said disk. Adjustment of the friction-disk 21 to and from the center of the disk 22 is effected by means of a lever 23, fulcrumed at 24 to an arm 25, projecting from a brace 26, secured to the frame 1 above

the friction-wheel shaft. The lower end of the hand-lever 23 is bifurcated or provided with arms 27, having perforations 28 to receive pivots 29 on half-rings 30, that are received in an annular groove or recess formed on the hub 31 of the friction-wheel. A bolt 27^a may be passed through the lever-arms 27 to clamp the half-rings 30 in suitable engagement with the annular groove of the friction-wheel hub. On the lever 23 is carried a spring-latch 32 and its releasing-lever 33, the said spring-latch being arranged to engage a toothed locking segment or rack 34, supported on the brace-arm 25, to which the lever 23 is fulcrumed.

The rear end portion of the friction-wheel shaft 20 is somewhat reduced in diameter and is loosely journaled in or received by a perforation 35, formed in the enlarged or shouldered end 36 of a rod 37, the other end of which is passed through a perforation in one of the side bars 5 of the double cultivator beam or frame, the said rod being arranged transversely of the machine and at right angles with the beam 5 and shaft 20 of the friction-wheel. Surrounding the rod 37, between the beam 5 and rod-shoulder 36, is a spiral spring 38, that normally acts to press the friction-wheel 21 toward and in firm contact with the friction-disk 22, so that as the main axle 3 and disk 22 thereon are revolved by forward movement of the machine a rotary movement will be thereby imparted to the friction-wheel 21 and its shaft.

By swinging the lever 23 forward or back the speed of the friction-wheel 21 will be varied as desired. One end of the rod 37 is notched or provided at the inner side of the beam 5 with an annular groove 39 to engage the bifurcated end 40 of a foot-lever 41, that is provided with a pivot or fulcrum 42 on one side of the beam 5 and near its rear end. By pressing down slightly on the foot-lever 41 the friction-wheel 21 will be drawn a sufficient distance away from the rotary friction-disk 22 so as not to take power therefrom, and consequently the operation of the choppers, actuated from the shaft 20, can be arrested at will.

On its forward end the friction-wheel shaft 20 carries a disk 43, provided with two forwardly-projecting pins 44 and 45, adapted to engage the under side of a bar 46, by which a chopper or chopping-hoe 47 is carried. One end of the bar 46 is reduced in diameter and extended through a perforated bearing 48, supported on the forward end of the machine-frame near one side thereof, a nut 49 being secured on this end of said bar 46 in bearing contact with a spiral spring 50, that surrounds the bar intermediate the bearing 48 and said nut. To the other side of the machine-frame is secured a vertically-slotted guide 51, in which the bar 46 is adapted to work.

In the forward movement of the machine the cultivators 6 and 7 are caused to travel between the rows of plants and loosen and pulverize the soil and throw it over against and around the plants. The rotary movement of the disk 43, derived from the friction-gearing hereinbefore described, causes one of the pins, as 44, to engage a notch or recess 52 in the under side of the bar 46, thereby raising said bar and with it the chopping hoe or hoes 47 over the young plants to the opposite side of the row, and then lowers the chopping mechanism in readiness to make its stroke, the spring 50 being meantime compressed by the longitudinal movement imparted to the bar 46 through its engagement with the pin 44 on the disk. As the disk 43 continues to rotate, the other pin 45 strikes against the under side of the bar 46 and lifts it so as to disengage the notch 52 from the pin 44, whereupon the previously-compressed spring 50 forces back the bar 46 in an opposite direction, thereby causing the chopping hoe or hoes to cut out the plants in a line at a right angle to the row and in a true horizontal direction as distinguished from the action of machines employing rotary cutters, which leave the surface between the plants uneven and lowest in the center.

It will be observed that the hand-levers 16 and 23 and foot-lever 41 are arranged within easy reach of the driver's seat 53, that is mounted on the rear portion of the tongue.

By a slight pressure on the foot-lever 41 the friction-wheel 21 will be moved away from the friction-disk 22, so as to arrest or suspend the operation of the choppers when desired, and on releasing the said foot-lever the spring 38 will immediately force the friction-wheel 21 into firm engagement with its actuating friction-disk.

If it is desired to change the speed of the chopping devices, the lever 23 will be swung forward or back, as required, to carry the friction-wheel 21 toward or from the center of the friction-disk 22, thus affording ready means for regulating the action of the choppers for cutting out the plants at any required intervals.

With the lever 16 and its connections the frame of the machine may be adjusted or shifted to an angle to either side of the line of draft, so as to conform to the trend of the rows and keep the drive-wheels always in the space or intervals between the rows. By mounting this lever 16 in the center line of the tongue, as described, its operation is rendered more easy and efficient for shifting or adjusting the frame, as required.

While there may be carried by the bar 46 only a single chopping-hoe 47, it will be of advantage to employ two hoes arranged, preferably, side by side, thus requiring only half the usual number of strokes and permitting an adjustment of the hoes to and from each other, so that the cotton plants can be chopped out at any desired intervals or with any required distance between the hills—say from six to twenty-four inches apart.

Where two chopping-hoes 47 are employed

together their shanks 54 will be securely connected to opposite sides of the reciprocating or oscillating bar 46 by means of bolts 55 or otherwise. There is preferably provided in the lower end of each hoe-shank a transversely-arranged slot 56 for engagement with a bolt 57, passed through an opening 58 in the hoe-blade, thus permitting a transverse adjustment of the hoes toward and away from each other.

The cutting edge of each hoe may be twelve inches in length, and the space between the two hoes may be one inch, the hoes when thus adjusted covering a space of twenty-five inches and giving a hill-space of one inch, if the machine is adjusted to a stroke every twenty-six inches. If we close up the space between the two hoes and make no change in the stroke, we will have a cut of twenty-four inches and a hill-space of two inches. If a hill-space of more or less than two inches is desired, but no change in the cut of twenty-four inches made by the two closely-adjusted hoes, it will be necessary to shift the lever 23 and thereby change the set of the machine or stroke of the choppers. By drawing the lever 23 a little toward the main axle 3 the friction-wheel 21 will be moved or adjusted a little nearer the circumference of the friction-disk 22, thereby increasing the speed of the friction-wheel 21 and causing the hoes to make a stroke in less than twenty-six inches, and consequently diminishing the hill-space.

A reverse adjustment of the lever 23 will carry the friction-wheel 21 nearer the center of the friction-disk 22, thereby lowering the speed of the friction-wheel 21, so that the stroke and hill-space will be correspondingly increased, the cut of twenty-four inches remaining the same if there is no change in the adjustment of the hoes with relation to each other. So, too, if it is desired to vary the extent of cutting edge or surface presented by the chopper or choppers either hoe 47 may be detached or the two hoes may be adjusted to lap more or less one over the other, thus giving a cutting-surface varying from twelve to twenty-four inches, as required, and then by means of the lever 23 the set or stroke can be adjusted to provide for any required hill-space according to the speed with which the chopping mechanism is operated.

It is obvious that more than one cultivator-beam and more than one chopper-carrying frame may be mounted on the same axle. By a slight change or reversing of position given to the choppers and their operating mechanism the choppers may be made to cut either to the right or the left, as desired, and I therefore do not confine myself to the precise location and arrangement of parts shown. The manner of mounting the tongue and frames, as described, and the construction and arrangement of the rocking segment-plate 15 and lever 16, pivoted thereto in a central line with the tongue, greatly facilitate the working of the machine and its adjustment to the trend of the rows. Although I have referred to the parts 6 and 7, generally, as cultivators, it will be understood that the scrapers 6 are intended, as usual, to scrape away everything from around the cotton plants and throw it to the middle of the space between rows, while the cultivators 7, following after, throw fresh soil to and around the plants.

What I claim as my invention is—

1. In a cotton-chopper, the combination with the frame 1, the main axle or drive-shaft 3, and the chopping mechanism supported on said frame and actuated from said axle or main drive-shaft, of the tongue-stud 10 having pivotal connection with said axle, the tongue 12, the **S**-shaped strap-irons 11 rigidly connecting the said tongue and tongue-stub, the vertically oscillatory and toothed segment-plate 15 pivotally mounted between said strap-irons, the lever 16 pivotally mounted on said segment-plate and having one end connected with the machine-frame, the pivot of said lever being in line with the pivot of the tongue and a spring-latch 19 carried by said lever to engage the teeth of the segment-plate and lock the frame in adjusted position, substantially as described.

2. In a cotton-chopper, the combination of the frame 1, the main axle or drive-shaft 3, the tongue-stub 10 pivotally supported on said axle, the tongue 12, the **S**-shaped strap-irons 11 rigidly connecting the said tongue and tongue-stub and provided with perforations 13, the toothed segment-plate 15 mounted between said strap-irons and having trunnions 14 engaged in said perforations of the strap-irons, the lever 16 mounted on the said segment-plate and having its pivot in line with the pivot of the tongue, links 17 connecting said lever with the frame and the spring-latch 19, substantially as described.

3. In a cotton-chopper, the combination of the main axle or drive-shaft 3, the frame 1 and beam 5 mounted on said axle, the friction-disk 22 rigidly secured to the said axle, the shaft 20 mounted on the frame 1, chopping mechanism actuated from said shaft, the friction-wheel 21 mounted upon and having a longitudinal adjustment on the shaft 20 in contact with the friction-disk 22, a lever 23 for shifting the friction-wheel to and from the center of the friction-disk, the longitudinally-movable rod 37 having a shouldered end 36 engaged with the shaft 20, one end of said rod 37 being extended through and supported in the beam 5, the spring 38 surrounding the rod 37 between the beam 5 and shoulder 36 and adapted to hold the friction-wheel 21 in firm bearing contact with the friction-disk 22, and the foot-lever 41 fulcrumed on the beam 5 and engaged with the rod 37 to draw the friction-wheel away from the friction-disk, substantially as described.

4. In a cotton-chopper, the combination of the frame 1, the shaft or main axle 3 having a friction-disk 22 secured thereon, the shaft

20 mounted on the frame 1 and provided with chopper-operating mechanism, the friction-wheel 21 splined on the shaft 20 in contact with the friction-disk 22 and provided with a circumferentially-grooved hub, the brace-arm 25 supported on the frame 1 above the shaft 20 and having a segment-rack 34 secured thereto, the lever 23 fulcrumed to the arm 25 and having its lower end bifurcated or provided with arms 27 and the half-rings 30 pivotally connected with said arms and engaged in the groove of the friction-wheel hub, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH I. DUNLAP.

Witnesses:
JAMES C. MARSHALL,
I. M. LITTLE.