No. 634,825. Patented Oct. 10, 1899.

J. MALLON.

CULTIVATOR.

(Application filed June 15, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

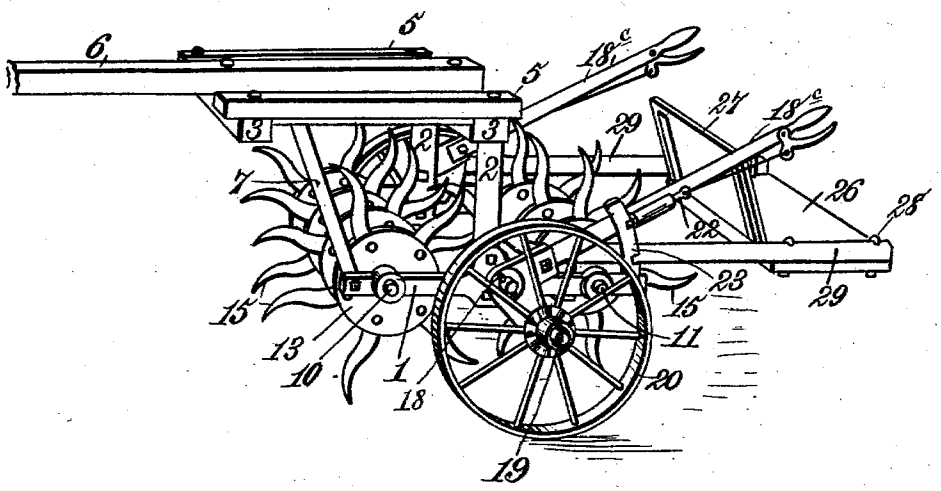
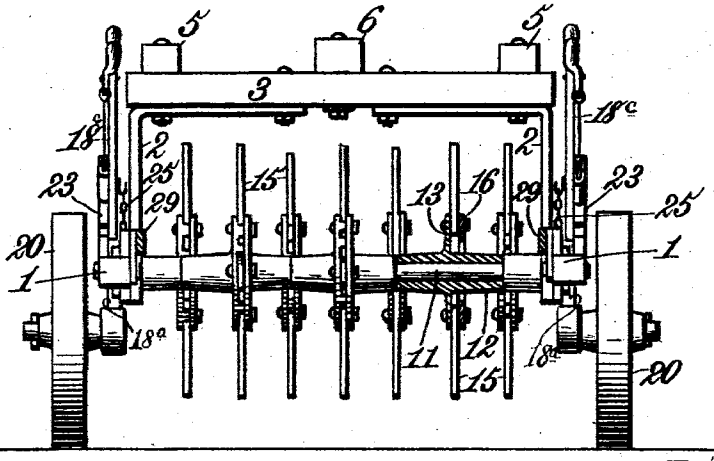


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 3

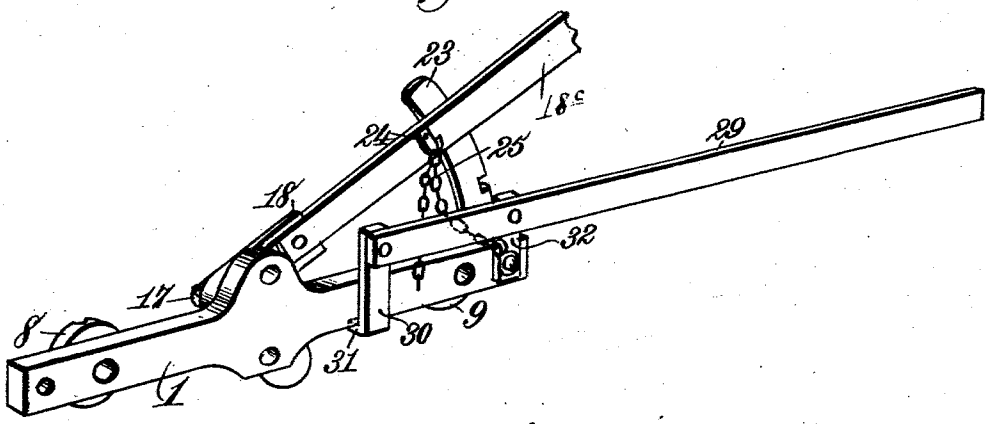


Fig. 4.

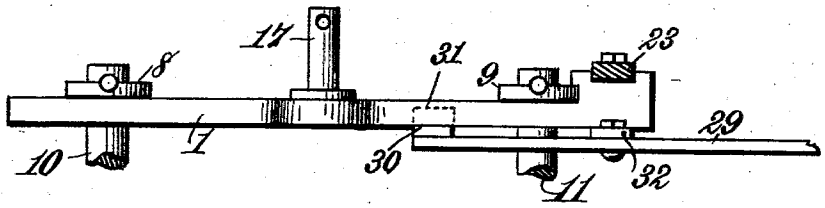


Fig. 5.

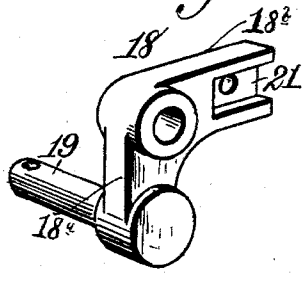
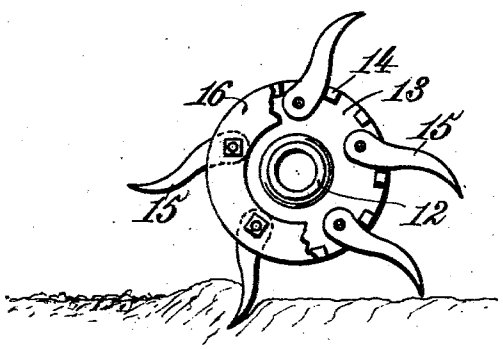


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES MALLON, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-HALF TO JAMES W. BODLEY, OF STAUNTON, VIRGINIA.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 634,825, dated October 10, 1899.

Application filed June 15, 1899. Serial No. 720,649. (No model.)

To all whom it may concern:

Be it known that I, JAMES MALLON, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Cultivators, of which the following is a specification.

In United States Patent No. 367,989, issued to me August 9, 1887, I have shown and described certain improvements in stubble-diggers and cultivators wherein is employed a main frame, supporting-wheels therefor, transversely-extending shafts loosely mounted on the main frame, digging mechanism thereon, and means for shifting the positions of said shafts for the purpose of varying the depth at which the diggers are operated in the ground.

My present invention is designed as an improvement upon that shown in the former patent referred to; and it consists of a main frame carrying digging mechanism, angle-levers pivoted to said frame, supporting-wheels carried by said levers, and flexible connections between said levers and said frame whereby relative movement of the supporting-wheels and the digging mechanism is permitted during the digging operation and the extent of said movement is limited.

It also consists in certain details of construction and combinations of parts, which will be hereinafter more fully described and claimed.

Figure 1 is a perspective view illustrative of my invention. Fig. 2 is a rear elevation of the same partly in section. Fig. 3 is a detail perspective view, on an enlarged scale, of one of the side bars of the frame and certain parts coöperating therewith. Fig. 4 is a top plan view of the same, and Figs. 5 and 6 represent details.

Like reference-numerals indicate like parts in the different views.

My improved device is especially adapted for use in the cultivation of sugar-cane and is provided with means whereby the entire surface of the soil under cultivation may be loosened and with means whereby it may operate upon opposite sides of the hills. It is particularly adapted for use in moist hot climates, like that of Cuba, where loosening after rains is desirable to prevent the packing and incrustation of the surface.

The device is made up of a main frame comprising side bars 1 1, uprights 2 2, cross-beams 3 4, to the former of which said uprights are secured, longitudinally-extending beams 5 5, connecting the cross-beams 3 and 4, a draft-beam 6, and diagonally-arranged bracing-bars 7, connecting the forward ends of the side bars 1 with the beams 5 5. The side bars 1 1 are provided adjacent to their ends with lateral extensions or enlargements 8 9, through which the shafts 10 11, respectively, pass and are keyed or otherwise secured. On the shafts 10 and 11 the digging mechanism is loosely mounted. The same consists of a series of sleeves 12, having flanges 13 thereon, provided with laterally-extending lugs or projections 14, pivotally-mounted digging-teeth 15, and annular disks or rings 16, secured to the flanges 13 by bolts or other analogous devices, said rings being provided with inwardly-extending spacing lugs or projections, which provide for the free pivotal movement of the digging-teeth 15 and prevent lateral or twisting movement thereof. It will be observed that the sleeves 12, which constitute the hubs of the rotary diggers, extend upon opposite sides of the flanges 13 thereof and that the ends of each of said sleeves abut against the ends of the adjacent sleeves, thereby holding the diggers spaced apart upon the shafts on which they are mounted. The digging mechanism on the shaft 10 is similar to that on the shaft 11; but the diggers on the shaft 11 are arranged in line with the spaces between the diggers on the shaft 10. The construction of the digging mechanism above described is similar to that shown and claimed in my former patent referred to. Extending outwardly from the side bars 1 of the main frame, adjacent to the points of connection of the standards 2 therewith, are pivot-studs 17, on which are pivotally mounted the angles of bell-crank levers 18, the pendent arms 18^a of which carry the wheel-spindles 19, while the horizontal arms 18^b carry the rearwardly-extending lever-arms 18^c, having hand-grips arranged within convenient reach of a person on a rear standing-board 26, hereinafter explained. The arms 18^b of the bell-crank le-

vers 18 are preferably constructed with sockets, as at 21, Fig. 5, to receive the front lower ends of the inclined lever-arms 18^c, which are bolted in place. Each lever-arm 18^c is provided with a detent or locking-bar 22, adapted to engage one or the other of a plurality of notches on a segmental rack-bar 23, secured to the frame. Each of said levers is also provided with a hook 24, which is adapted to interlock with one of the links of the chain 25, also secured to the frame. By this construction it will be seen that by raising or lowering the rear ends of the lever-arms 18^c the main frame on which the digging mechanism is mounted may be lowered or raised and locked in adjusted position. With the parts in this position the machine is in condition to be moved from point to point or to be operated when straddling a ridge and the wheels are in a hollow, as in digging stubble. When the machine is in ordinary use, however, the lever-arms 18^c are raised so that the detents 22 thereon are out of range of the rack-bars 23, and the connection between the wheels 20 and the digging mechanism is through the flexible chains 25. Relative movement of said digging mechanism and said wheels is therefore permissible, although the extent of this movement is limited by the chains 25. The digging mechanism may thus adjust itself automatically, and in the event of its striking an obstruction it will be permitted to yield without lifting the wheels 20 from the ground, and vice versa. Of course the depth at which the digging mechanism may penetrate the ground is controlled by the adjustment of the chains 25 on the hooks 24.

It will be observed that the arms 18^a of the bell-crank levers 18 extend rearwardly and downwardly from the points of pivotal connection between said levers and the main frame. This is essential to the successful operation of the machine, for if they extended forwardly the wheels would catch on uneven ground and not permit of the yielding of the same, with the result that the diggers would be lifted out of the ground and make a skip in the work. This of course cannot occur in the construction shown.

When all of the digging devices which the shafts 10 and 11 are capable of holding are in position, as shown in Figs. 1 and 2 of the drawings, the machine will operate to loosen or cultivate the entire surface of the ground. If it be desired, however, to cultivate upon the sides only of the hills, the digging devices at the central portions of the shafts 10 and 11 are removed, leaving a space of proper distance which will straddle the rows.

In connection with the foregoing parts I employ a standing-board 26, so located, mounted, and arranged upon the frame that the weight of the operator may be advantageously utilized when cultivating heavy soil. Said standing-board is provided with a dash 27 and is secured at its ends by means of hooks 28 or other analogous devices to side strips 29, having secured at their inner ends L-shaped plates or bars 30, the flanges 31 of which engage the under side of the side bars 1 of the main frame. Between the plates or bars 30 and the standing-board 26 the strips 29 are pivoted to upwardly-extending brackets 32, secured to the rear end of the side bars 1. In this way provision is made for the operator at the rear of the machine, and his weight is utilized with considerable leverage upon the main frame for sinking the same and the digging mechanism thereon into the ground.

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

1. In a cultivator, the combination with the main frame carrying digging mechanism, of angle-levers pivoted to said frame, supporting-wheels carried by said levers, and flexible connections between said levers and said frame.

2. In a cultivator, the combination with the main frame carrying digging mechanism, of angle-levers pivoted to said frame, supporting-wheels carried by said levers, flexible connections between said levers and said frame, for permitting relative movement of said digging mechanism and said wheels, and means for controlling the extent of said movement.

3. In a cultivator, the combination with the main frame carrying digging mechanism, of bell-crank levers pivoted to said frame, the lower arms of which extend rearwardly from the points of pivotal connection of said levers with said frame, supporting-wheels carried by said lower arms, and flexible connections between said levers and said frame.

4. In a cultivator, the combination with the main frame carrying digging mechanism, of angle-levers pivoted to said frame, supporting-wheels carried by said levers, chains connecting said levers and said frame, and means for changing the points of connection of said chain.

5. The combination of the side bars having transverse shafts connecting their end portions and pivot-studs centrally between the shafts, gangs of rotary diggers mounted on said shafts, bell-crank levers pivoted on the pivot-studs and having rearwardly-extending arms and pendent arms carrying wheel-spindles, inclined rearwardly-extending lever-arms secured to the rearwardly-extending arms of the bell-crank levers, supporting-wheels mounted on said wheel-spindles, and means for locking the inclined lever-arms when raised or lowered to lower or raise the gangs of rotary diggers, substantially as described.

6. The combination of the side bars having transverse shafts connecting their end portions and pivot-studs centrally between the shafts, side strips engaged with and extending rearward from the side bars, a standing-board on the rear ends of the side strips, gangs of rotary diggers mounted on the transverse shafts, bell-crank levers arranged on

said pivot-studs and having rearwardly-extending arms and pendent arms carrying wheel-spindles, inclined lever-arms secured to the rearwardly-extending arms of the bell-crank levers and having hand-grips within convenient reach of a person on the standing-board, supporting-wheels on the wheel-spindles, and means for locking the inclined lever-arms when raised or lowered, to lower or raise the gangs of rotary diggers, substantially as described.

7. In a cultivator of the character described, the combination with the main frame, including parallel side bars and standards extending upwardly from said side bars, of a pair of transversely-extending shafts connecting and secured to said side bars, rotary digging mechanism on said shafts, supporting-wheels, angle-levers pivoted to said frame and to the shaft on which said supporting-wheels are mounted, detent mechanism on said levers, segmental rack-bars with which said detents coöperate, hooks on said angle-levers, and chains connected to said side bars and engaged with said hooks.

8. The combination of the side bars, the non-rotary shafts rigidly connecting the end portions of the side bars, the gangs of rotary diggers turning on said shafts and composed of sleeves arranged loose on the shafts and having disks provided with pivoted digging-teeth, said sleeves and disks being removable and replaceable, whereby some on each non-rotary shaft may be detached at will, supporting-wheels, and means for shifting said wheels and raising or lowering said side bars and the gangs of diggers, substantially as described.

9. In a cultivator of the character described, the combination with the main frame, including parallel side bars, and digging mechanism mounted thereon, of upright brackets on said bars, longitudinally-extending strips pivoted on said brackets, L-shaped plates or bars connected to the inner ends of said strips and adapted to engage the under side of said side bars, and a standing-board secured to the rear ends of said strips.

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

JAMES MALLON.

Witnesses:
WM. A. GRUBERT,
B. F. TERRY.