No. 691,282. Patented Jan. 14, 1902.

A. H. MEADE.

CHOPPER AND THINNER FOR PLANTS.

(Application filed May 11, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

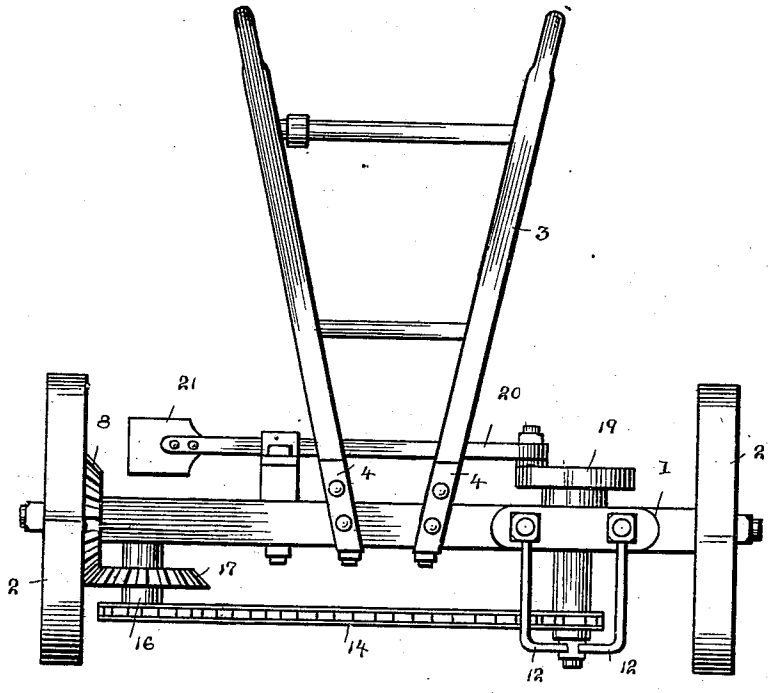
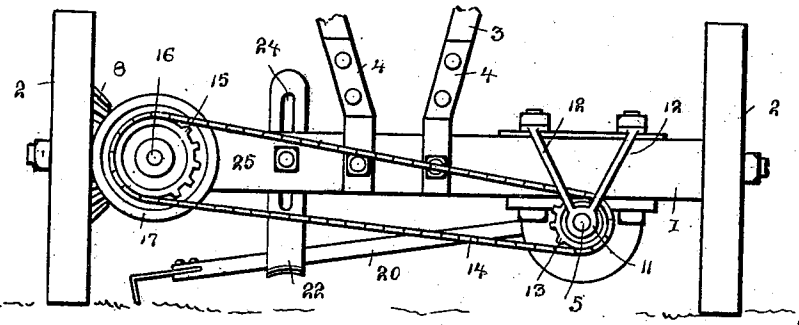


Fig. 2.



Witnesses
T. W. Riley,
A. Schmidt.

Inventor
Arthur H. Meade.,
By Victor J. Evans.
Attorney

No. 691,282. Patented Jan. 14, 1902.

A. H. MEADE.

CHOPPER AND THINNER FOR PLANTS.

(Application filed May 11, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

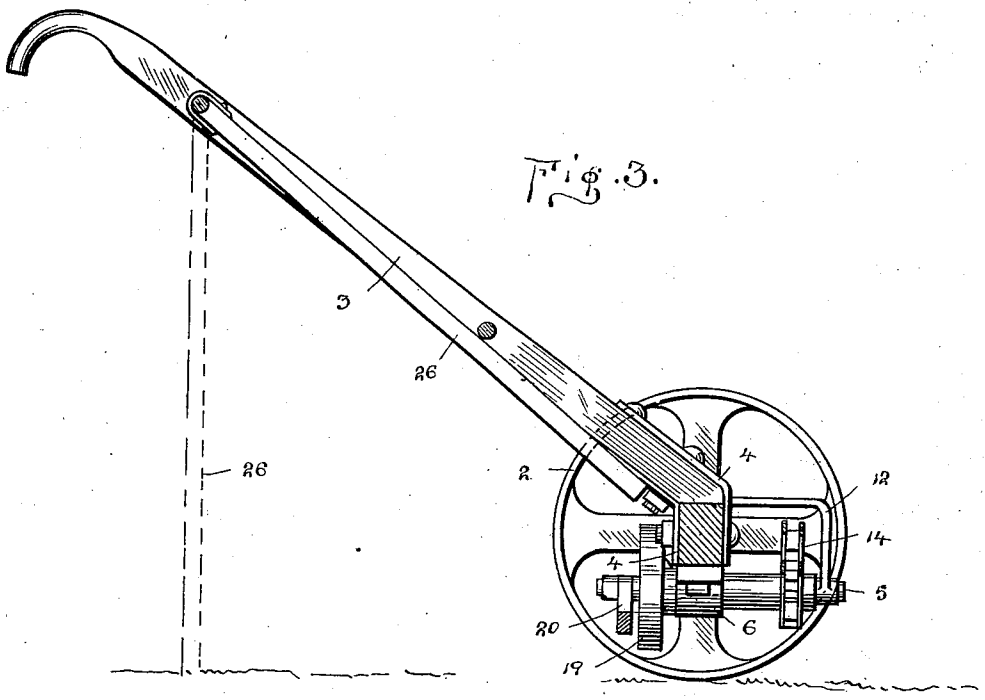


Fig. 4.

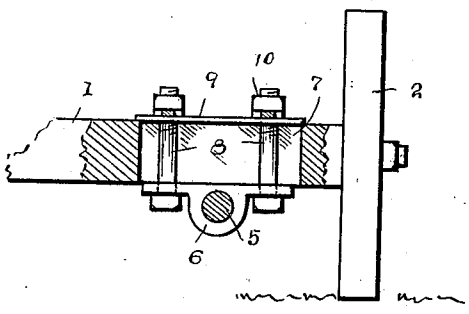
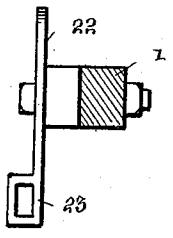


Fig. 5.



Witnesses
T. W. Riley,
H. Schmidt.

Inventor
Arthur H. Meade,
By Victor J. Evans.
Attorney.

UNITED STATES PATENT OFFICE.

ARTHUR H. MEADE, OF NEW RICHMOND, MICHIGAN.

CHOPPER AND THINNER FOR PLANTS.

SPECIFICATION forming part of Letters Patent No. 691,282, dated January 14, 1902.

Application filed May 11, 1901. Serial No. 59,848. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR H. MEADE, a citizen of the United States, residing at New Richmond, in the county of Allegan and State of Michigan, have invented new and useful Improvements in Choppers and Thinners for Plants, of which the following is a specification.

This invention relates to choppers and thinners for plants, and is more particularly designed as an improvement in machines for thinning the rows of sugar-beets.

In the culture of sugar-beets the same are sown in rows, and these rows are subsequently thinned in order to permit the beets to grow in bunches.

The object of the present invention is the provision of a machine for accomplishing the purpose stated, which machine is simple in construction, efficient in operation, and one which may be manufactured at comparatively small expense.

With this general object in view and others which will appear as the nature of the improvements is better understood the invention consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a top plan view of a chopper and thinner for plants constructed in accordance with the present invention. Fig. 2 is a front elevation thereof. Fig. 3 is a transverse sectional view of the same. Fig. 4 is a detail sectional view of the tensioning means for the gearing operating the thinning-knife. Fig. 5 is a detail elevation of the supporting-guide for the knife-carrying bar.

Referring to the drawings, the numeral 1 designates a supporting-beam, to which beam are suitably connected at each of its ends the bearing-wheels 2, through the medium of which the machine is operated. These wheels may be secured in any suitable manner to the beam 1, and connected to the central portion of the beam 1 is a pair of handles 3, by means of which the machine is pushed by the operator over the field of beets. As a convenient means for connecting the handles 3 to the beam 1 a pair of straps 4 is employed, said straps being bent at a point intermediate their ends, so as to be readily connected to the beam 1 and the handles 3 and at the same time impart to said handles the proper degree of pitch or inclination with relation to the beam 1.

Arranged adjacent one end of the beam 1 and extending transversely thereof is a shaft 5, through the medium of which the thinning-knife is operated, and said shaft is journaled in a suitable bearing 6, arranged at the under side of the beam 1. The beam 1 is provided with a longitudinally-extending slot 7, and arranged within said slot 7 and connected to the bearing 6 is a pair of bolts 8 or other equivalent, the upper ends of the bolts 8 passing through a bearing-plate 9, and threaded upon said upper ends are adjusting-nuts 10. It will be observed that the slot 7 is of greater length than the bearing 6, and by reason of this said bearing is capable of adjustment in a longitudinal direction upon the beam 1. The extreme forward end of the shaft 5 rests in a supporting-bracket 11, which bracket is arranged at the lower ends of a pair of forwardly and downwardly extending rods 12, the rear end of said rods being connected to the upper ends of the bolts 8 and being maintained thereby upon the beam 1. By reason of the supporting-bracket 11 it will be seen that the shaft 6 is maintained in fixed relation to the beam 1; but at the same time it is capable of rotation in the bearing 6 and the bracket 11.

Mounted upon the forward end of the shaft 5 is a sprocket-wheel 13, and working upon said sprocket-wheel is a chain 14, which chain also works upon a sprocket-wheel 15, carried by a jack-shaft 16, arranged in proximity to the bearing-wheel 2 at the end of the beam 1 opposite to that whereon the shaft 5 is located. A bevel-gear 17 is carried by the jack-shaft 16, and said wheel meshes with a corresponding bevel-wheel 18, carried by the adjacent bearing-wheel 2, and through the medium of the gears 17 and 18 it will be seen that motion is imparted to the shaft 16 when the machine is pushed over the ground.

A crank-wheel 19 is carried by the shaft 5 at its rear end, to which crank-wheel is connected one end of a knife-carrying bar or pitman 20 and to the other end of which bar or

pitman is connected a knife 21, and it will be observed that said knife is arranged in rear of the shaft 16, but spaced a sufficient distance from the adjacent wheel 2, so that the row of beets which is to be thinned may pass between said wheel and said knife. To maintain the bar or pitman 20 in proper operative relation to the beam 1, a supporting-guide 22 is employed, and said guide is provided at its lower end with a loop or eye 23, through which the bar or pitman 20 is adapted to reciprocate. The shank of the guide 22 is provided with an elongated slot 24, and passing through said slot is a connecting-bolt 25, through the medium of which the guide 22 is attached in a vertical position to the rear side of the beam 1. By means of the bolt 25 and the slot 24 it will be seen that the guide 22 when said bolt is loosened is capable of vertical adjustment upon the beam 1, and by means of said adjustment the degree of pitch or throw of the bar or pitman 20 is regulated. This regulation enables the knife 21 to either effect deep cutting or limit the action of such knife to more shallow cutting.

In order to maintain the handles 3 in elevated position when the machine is not being operated, a supporting-rod 26 is employed, the upper end of said rod being swiveled upon one of the rounds of the handles, and it will thus be seen that when said rod is not in use the same may be swung upon the rounds of the handles; but when desired for supporting said handles the rod 26 may be swung to the position shown in dotted lines in Fig. 3 and when in such position is adapted to maintain the handles 3 elevated. It is also obvious that the gears 17 and 18 should be protected during the operation of the machine from accumulations of sand, dirt, and other matter, and to this end said gears may be inclosed in a proper guard, which guard it is not deemed necessary to illustrate.

With the parts assembled in the relation illustrated and described the operation of the machine is as follows: The handles 3 are grasped by the operator, and pressure being applied thereto the machine is pushed forwardly, the row of beets to be thinned passing between the knife 21 and the adjacent bearing-wheel 2. Said wheel, through the medium of the gears 17 and 18, imparts motion to the shaft 16, which shaft, by means of the sprocket-wheels 13 and 15 and the chain 14, communicates motion to the shaft 5. As the latter is rotated the crank-wheel 19 rotates therewith, and a reciprocatory movement is thereby imparted to the knife-carrying bar or pitman 20. Motion being thus imparted to the knife 21, and the degree of pitch or throw of the pitman having already been determined by the adjustment of the guide 23, the knife 21 is caused to act upon the row of beets, and the latter is thinned at intervals of approximately six inches. If at any time the chain 14 should become too slack, the same may be properly tensioned by loosening the bolts 8, whereupon the bearing 6 may be slid upon the beam 1, and in the movement of said bearing it is obvious that the supporting-bracket 11 follows the same.

While the form of machine herein described and shown is what is believed to be a preferable embodiment of the same, it is obvious that the invention is susceptible of various changes in the form, proportion, and minor details of construction, and the right is therefore reserved to modify or vary the invention as falls within the scope thereof.

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

1. In a machine of the class described, the combination with a transversely-operating reciprocating cutter; of a shaft connected thereto and mounted in a bearing adjustably mounted upon the machine; means for actuating said shaft through the movement of the machine; and means for regulating the degree of pitch or throw of the cutter comprising a slotted guide, vertically adjustable on the beam, and having a loop or eye at its lower end.

2. The combination with a supporting-beam, of an adjustable shaft arranged transversely thereof, a crank at the rear end of said shaft, a sprocket-wheel at the forward end thereof, a shaft arranged parallel to the adjustable shaft, a sprocket on said second shaft, a sprocket-chain connecting the two shafts, gearing for driving the shafts, a pitman carrying a cutter and connected to the crank, and means for adjusting said pitman to control the pitch of the cutter.

3. The combination with a supporting-beam formed with a longitudinal slot, of an adjustable shaft-bearing suspended below the beam by bolts extending through the slot, and a bearing-plate above the beam through which the bolts extend, a shaft within said bearing, a cutter operated by the shaft, driving-gear, and a sprocket-chain adapted to be tensioned by the adjustment of said bearing.

4. The combination with a longitudinally-slotted supporting-beam, of a transversely-operating reciprocating cutter, an adjustable guide for regulating the pitch of the cutter, a shaft arranged transversely of the beam for operating the cutter, and means for supporting said shaft adjustably comprising a bearing below the beam, a bearing-plate above the beam, bolts connecting said bearing and plate, and a bracket supported by depending arms, secured by said bolts.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR H. MEADE.

Witnesses:
A. C. CHAMBERS,
S. B. BARKER.