

S. L. ALLEN.  
 SELF LOCKING MECHANISM.  
 APPLICATION FILED FEB. 13, 1909.

1,013,098.

Patented Jan. 2, 1912.  
 3 SHEETS—SHEET 1.

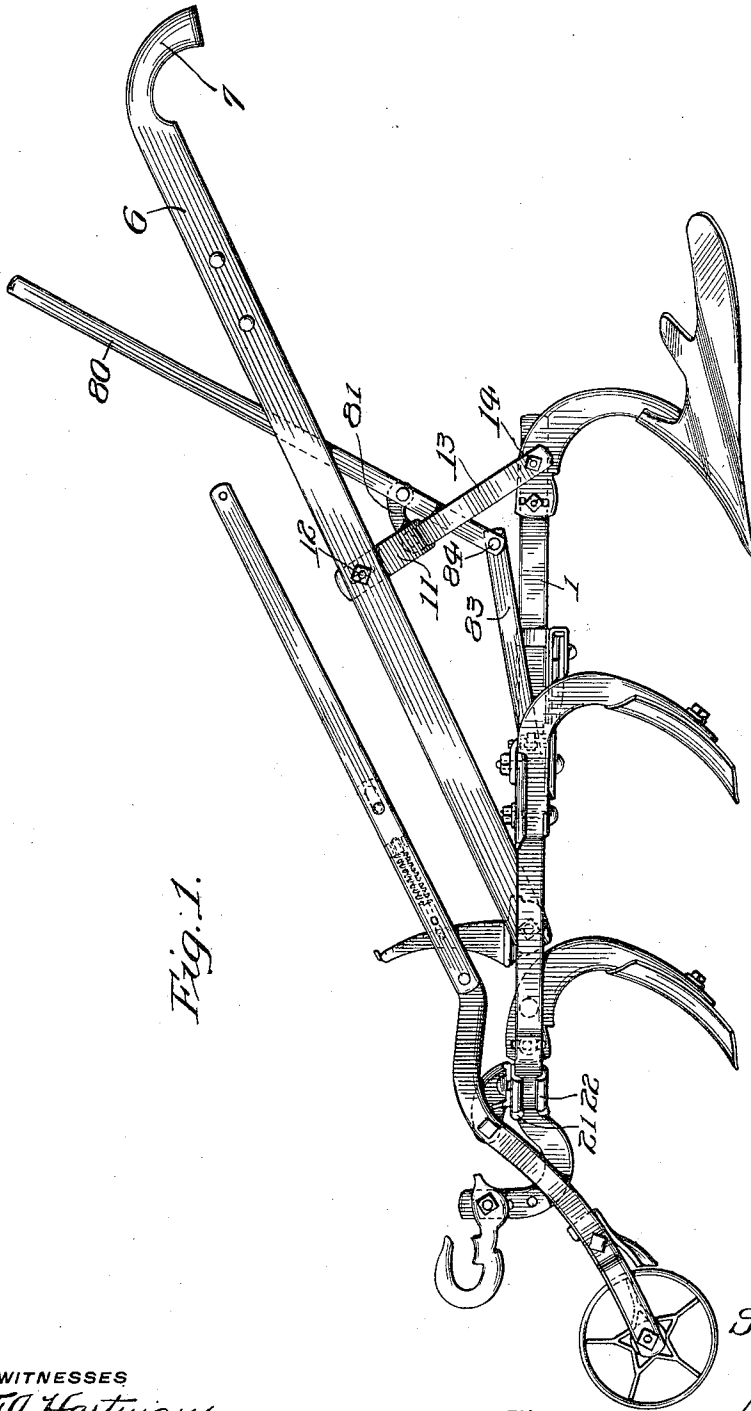


Fig. 1.

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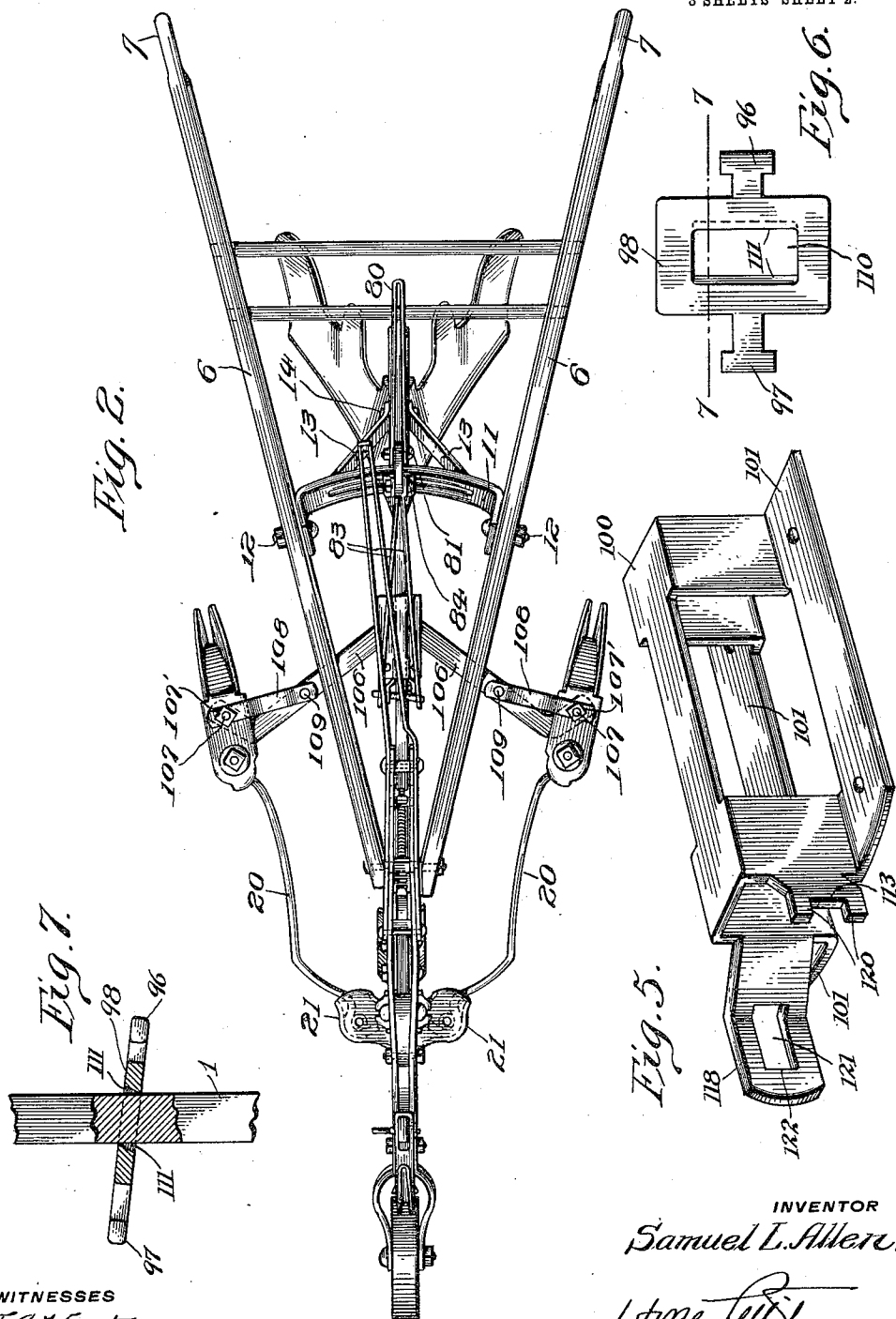
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3 SHEETS-SHEET 2.



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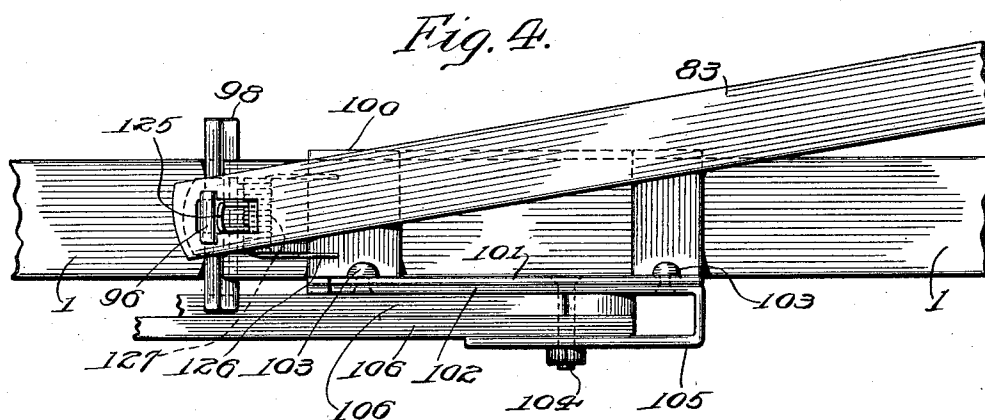
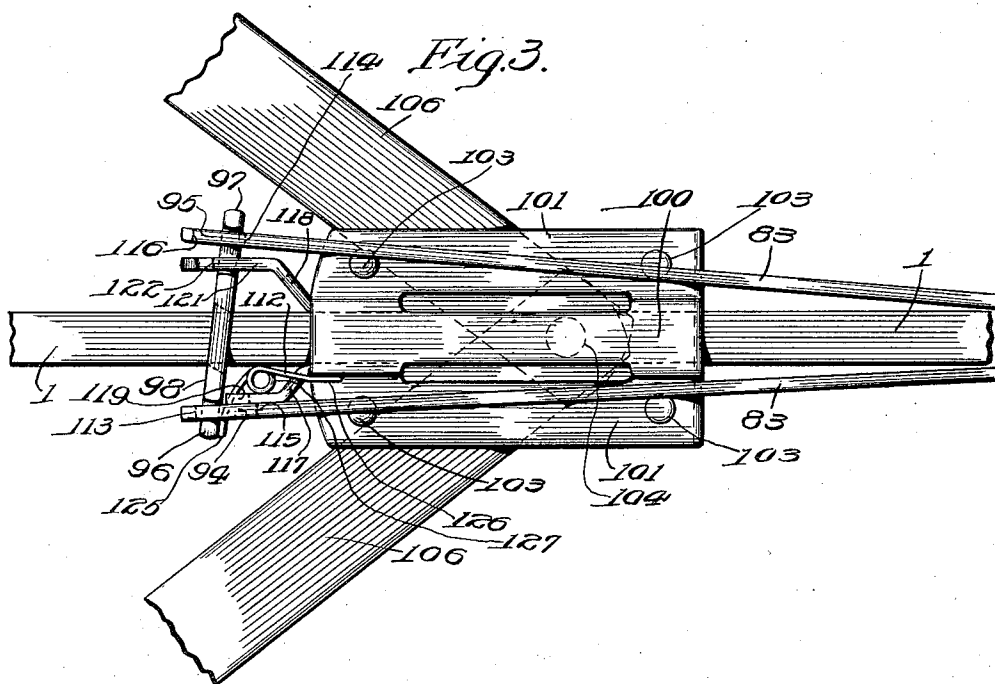
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**1,013,098.**

3 SHEETS--SHEET 3.



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# UNITED STATES PATENT OFFICE.

SAMUEL L. ALLEN, OF MOORESTOWN, NEW JERSEY.

## SELF-LOCKING MECHANISM.

1,013,098.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed February 13, 1909. Serial No. 477,505.

*To all whom it may concern:*

Be it known that I, SAMUEL L. ALLEN, a citizen of the United States, and a resident of Moorestown, county of Burlington, State of New Jersey, have invented certain new and useful Improvements in Self-Locking Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The main objects of this invention are to provide improved means between a fixed member and a movable member for automatically locking the movable member to the fixed member, in combination with actuating means for unlocking and moving the movable member, and to provide other improvements as will appear hereinafter.

Heretofore, the expanders used in cultivators have generally comprised a main actuating handle bar and a spring pawl, or other like mechanism actuated by a separate handle carried by the main handle bar, making it necessary to move two separate handles to effect the operation of the expander; moreover, the expanders heretofore used in cultivators have not been adapted to be locked at any point of their movement, but only in a limited number of positions.

This invention provides a self locking mechanism adapted to be used in a cultivator as illustrated, as an expander which may be operated entirely by a single handle, and which is self-locking at any point of its movement.

In the accompanying drawings, Figure 1 is a side elevation of a cultivator provided with a self locking expander constructed in accordance with this invention; Fig. 2 a top plan view of the same; Fig. 3 a top plan view of a portion of the expander; Fig. 4 a side elevation of the same; Fig. 5 a perspective of a portion of the expander; Fig. 6 an elevation of the binder plate of the expander; and Fig. 7 a fragmentary top plan view partly in section of the binder plate in operative position.

Referring to the drawings, one embodiment of this invention is shown applied in a machine known as a horse hoe and cultivator, which comprises a rigid main frame having a central longitudinal frame beam 1, of steel or wrought metal. Diverging rearwardly and upwardly from the forward part of the machine are the main handle bars 6, terminating in the usual main han-

dles 7. These handle bars are rigidly secured at their forward ends by any suitable means to the longitudinal beam 1. The handle bars 6 are further secured intermediate their ends to the beam 1 by means of a curved brace or yoke 11, the ends of which are rigidly secured to the handle bars by means of bolts 12, the yoke being rigidly connected to the beam by means of rearwardly and downwardly converging braces 13, the upper ends of which are secured to the yoke, and the lower ends of which are secured to the beam by means of a bolt 14. A pair of rearwardly diverging, substantially horizontal tool arms 20 are connected to the front end of the machine, the forward ends of the arms being pivotally supported between a pair of plates 21, 22, clamped rigidly upon the upper and lower sides respectively of the beam 1.

The improved self locking mechanism constructed in accordance with this invention is applied for swinging the tool bars 20 inwardly and outwardly upon their pivots and comprises an upwardly extending actuating lever or handle bar which is formed of a bar 80 folded centrally upon itself at the upper end of the lever, and having downwardly depending ends pivotally supported upon the rear end of a longitudinally extending bracket 81, which is embraced between the sides of the lever, and the forward end of which is rigidly secured to the upper surface of the brace 11 between the main handle bars 6. The lower ends of the lever 80 embrace the rear ends of a pair of links 83 which are pivotally connected to the lower ends of the lever by means of a bolt 84. These links are secured together at their rear ends by welding or otherwise and diverge forwardly from the central vertical plane of the machine and downwardly, terminating upon opposite sides of the central longitudinal beam 1 of the machine. The forward ends of the links 83 are of different effective lengths and are provided respectively with oblique substantially rectangular slots 94 and 95 in which are located respectively the ends 96 and 97 of a cant plate 98 surrounding the central beam 1. The actuating lever 80, through the links 83 and the cant plate 98, controls the reciprocation of a slider or sleeve upon the beam 1 to move the same into any desired position, the slider being suitably connected to the pivoted tool bars 20 as will be

hereinafter described. The arrangement of the links and their actuating lever is preferably such that when the links are substantially midway between the extremities of their forward and back motion the actuating lever and the end edges of the slots in the links will be substantially vertical.

The slider or sleeve is formed of a plate 100 of metal bent over the upper edge and the sides of the beam 1, the lower edges of the plate being bent outwardly to form flanges 101 to the under surface of which is secured the bottom plate 102, of the slider, by means of the rivets 103, and bolts 104. The rear end 105 of this bottom plate is folded to form a yoke through the sides of which extends a bolt 104, forming a pivotal support for the interposed inner ends of the superimposed links 106. These links are substantially flat and horizontal and the outer end of each link is pivotally and loosely connected to the under side of the upper end of one of the shanks 68 of the cultivator teeth 67, by a bolt 107 having a nut 107', the bolt passing loosely through the shank and the heretofore described clamping plate 70. Each of these links is curved rearwardly at its outer end to form a broad bearing for the shank of the tooth to keep the tooth rigid in a vertical plane, and to further hold the tooth, a brace 108 is rigidly secured at one end by means of a rivet 109 to the upper surface of each link adjacent its outer end and the brace extends upwardly and is pivotally secured at its upper end by the bolt 107 and nut 107' to the upper side of the clamping plate 70.

The cant plate 98 is provided with an oblique aperture 110 forming acute vertical edges 111 upon opposite sides of the frame beam 1 and adapted to bind or lock against the beam when the plate is in its canted or oblique position with respect to the beam, as shown in Fig. 3. The slots 94, 95 in the forward ends of the links 83 in which are carried the ends 96 and 97 respectively of the cant plate are so proportioned and arranged that when the cant plate is in its locked position, as indicated in Figs. 3 and 7, the forward edge 113 of the slot 94 in the shorter or left hand link is adjacent the front surface of the plate and the rear edge 114 of the slot 95 in the longer link is adjacent the rear surface of the plate, the opposite edges 115, 116 of the slots being spaced from the opposite surfaces respectively of the plate. By this construction, either the forward or the rearward movement of the links would tend to cant the plate toward a plane perpendicular to the beam and unlock the same therefrom. To hold the cant plate in its unlocked position, after it has been moved into this position by either the forward or rearward movement of the links, a pair of forwardly extending arms 117 and 118 project

rigidly, forwardly from the front end of the slider plate 100, and preferably integral therewith. These arms are of unequal length and are arranged upon the opposite sides respectively of the slider, the longer arm being adjacent the longer of the links 83 and the shorter arm being adjacent the shorter link. The shorter arm 117 is provided in its front edge with a recess 119 to receive one end of the spring 112, the forwardly projecting sides 120 of the arm forming a bifurcated stop for the rear side of one end of the cant plate whereby when this end of the cant plate has been moved slightly rearwardly to unlock the plate, the plate will impinge against the stop which will prevent any further rearward movement of this end of the cant plate with respect to the slider. The longer arm 118 is provided with a slot 121 surrounding the adjacent end 97 of the cant plate, the forward wall 122 of the slot being so placed that when the cant plate has been canted by a forward movement of the links to its unlocked position the wall will act as a stop to prevent the further forward displacement of the plate with respect to the slider. When the cant plate has been thus moved by the movement of the actuating lever in either direction to cause either side of the plate to impinge against the stop upon either side of the slider, a slight further movement of the lever in the same direction will tilt the plate about the stop as the axis and bring the opposite side of the plate into contact with the other stop whereupon the plate will be held stationary with respect to the slider and further movement of the lever in the same direction will be transmitted through the stops to the slider to move the same without changing the relative position of the cant plate with respect to the slider, thus the slider may be unlocked and moved in either direction to actuate the tool bars by means of the movement in one direction of the actuating lever 80. The cant plate is normally held in locked position by means of a spiral spring composed of a resilient wire folded centrally to form a loop 125 bearing loosely against one end 96 of the cant plate through the aperture 94 of the corresponding supporting link 83, the ends 126 of the wire embracing the projecting arm 117 of the slider and bearing against one side of the slider. Each half of the wire forming the spring is provided with a series of spiral turns 127 which rest between the arm 117 and the fixed beam 1. When the actuating lever 80 is released the spiral spring 125 acts automatically upon the cant plate to tilt the same and to lock the slider and the tool arms in fixed positions, and as any movement of the slider in either direction would act upon the cant plate through the

stops on the slider to lock the cant plate more firmly in position, it is only possible to unlock the cant plate and to move the slider and tool arms, through the movement of the actuating lever 80.

Although only one form in which this invention may be embodied is shown herein, the invention is not limited to the specific form disclosed, as many changes might be made in the details of construction within the spirit of this invention and the scope of the appended claims.

Having thus fully described my invention what I claim and desire to protect by Letters Patent of the United States is,—

1. The combination of a fixed member, with a movable member, a cant plate, said cant plate being connected to said second-named member, and surrounding said first-named member and engaging opposite sides thereof, for holding said second-named member against movement in either direction.

2. The combination with a fixed member, of a movable member, a cant plate for locking said movable member, normally held in locked engagement with said fixed member, and an actuating lever carried by said fixed member for unlocking said cant plate and acting through said cant plate to move said movable member in one direction or in the opposite direction.

3. The combination with a fixed member, of a movable member carried by said fixed member, a cant plate, normally held in locking engagement with said fixed member to lock said movable member, a pair of links upon opposite sides respectively of said fixed member, an actuating lever to reciprocate said links longitudinally of said fixed member to cant said plate to unlock the same, and a pair of stops upon said movable member adapted to engage against opposite sides of said plate respectively whereby the movement of said actuating lever in either direction will unlock said movable member, and move the same in a corresponding direction through the intervention of said cant plate and whereby said movable member will be automatically locked upon the release of said lever.

4. The combination with a fixed elongated beam, of a movable member, and a cant plate surrounding said beam and means coöperating therewith for automatically locking said movable member against movement in either direction longitudinally of said beam.

5. The combination with a fixed substantially straight elongated beam, of a movable member, and a cant plate surrounding

said beam and means coöperating therewith for automatically locking said movable member against movement in either direction longitudinally of said beam.

6. The combination with a fixed member, of a movable member, a cant plate engaging opposite sides of said fixed member, yielding means carried by said movable member and acting upon said cant plate for holding said movable member against movement either in one direction or in the opposite direction.

7. The combination with a fixed member, of a movable member, a cant plate normally engaging said fixed member to hold said movable member in fixed position and actuating means for moving said movable member either in one direction or in the opposite direction, the movement of said actuating means either in one direction or in the opposite direction acting to rotate said cant plate in a single direction to disengage said cant plate from said fixed member.

8. The combination with a fixed member, of a movable member mounted thereon, a cant plate surrounding said fixed member, yielding means carried by said movable member and normally holding said cant plate in fixed engagement to said fixed member, a pair of links arranged to engage said cant plate upon opposite sides of said fixed member respectively, and means to reciprocate said links to disengage said cant plate from said fixed member, and to move said movable member through the intermediary of said cant plate in either direction.

9. The combination with a fixed member, of a movable member, a single cant member arranged to engage said fixed member and normally locking said movable member against movement in either direction with respect to said fixed member, and means acting through the agency of said locking member for moving said movable member.

10. The combination with a fixed member, of a movable member, a single cant member arranged to engage said fixed member and normally locking said movable member against movement in either direction with respect to said fixed member, and reciprocatory means acting through the agency of said locking member for moving said movable member in either direction.

In witness whereof I have hereunto set my hand this eleventh day of February, A. D. 1909.

SAMUEL L. ALLEN.

Witnesses:

A. I. GARDNER,  
ALEXANDER PARK.