No. 640,411. Patented Jan. 2, 1900.

W. H. PARLIN & E. M. HEYLMAN.

PLOW.

(Application filed Oct. 16, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.

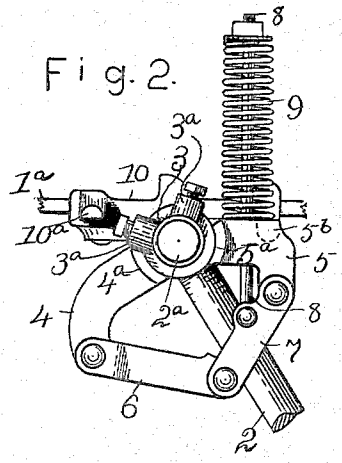


Fig. 1.

Attest

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Fig. 3.

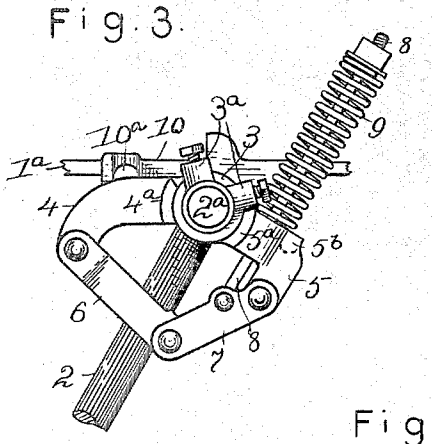


Fig. 4.

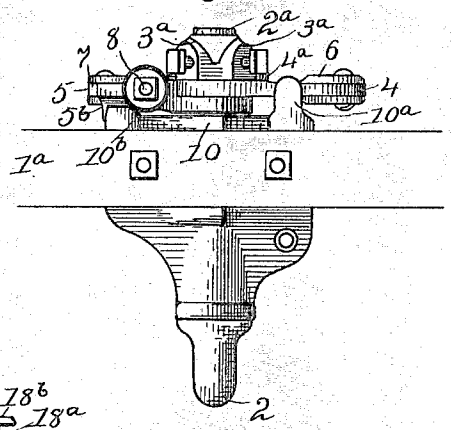


Fig. 5.

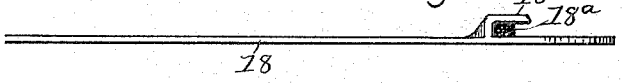


Fig. 6.

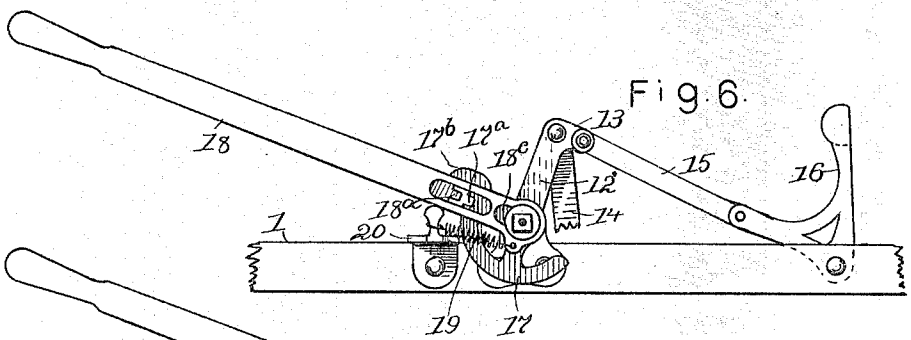


Fig. 7.

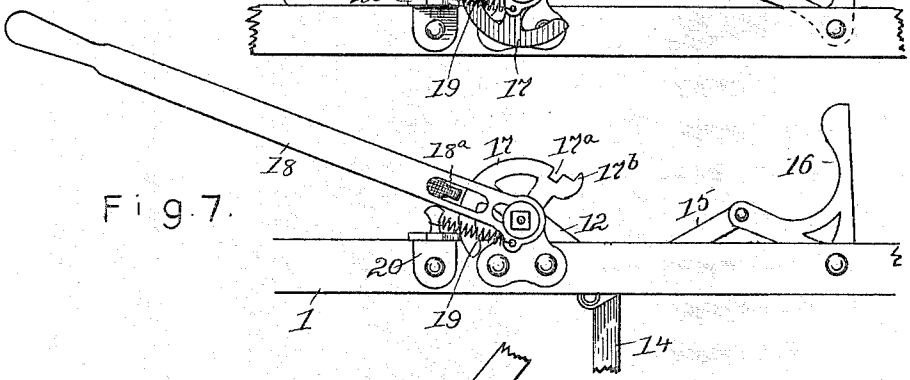
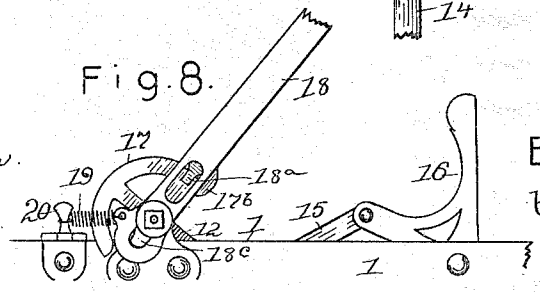


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM H. PARLIN, OF SEATTLE, WASHINGTON, AND EDWARD M. HEYLMAN, OF PEKIN, ILLINOIS, ASSIGNORS TO THE PARLIN & ORENDORFF COMPANY, OF CANTON, ILLINOIS.

PLOW.

SPECIFICATION forming part of Letters Patent No. 640,411, dated January 2, 1900.

Application filed October 16, 1899. Serial No. 733,775. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. PARLIN, of the city of Seattle, county of King, and State of Washington, and EDWARD M. HEYLMAN, of the city of Pekin, county of Tazewell, and State of Illinois, have invented certain new and useful Improvements in Plows, of which the following is a specification.

This invention has reference to wheel-plows; and it relates in part to mechanism for raising and lowering the plow or plows in the frame and in part to means for controlling the side swing of the rear caster-wheel. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a plan of a plow in dotted lines, showing our improvements in solid lines. Fig. 2 is a detail plan of the caster-controller, showing the caster-wheel axle turned aside in one direction. Fig. 3 is a similar detail showing the caster-wheel axle turned aside in the opposite direction. Fig. 4 is an elevation of the front of the caster-controlling device. Fig. 5 is a detail plan of the hand-lever used to raise the plow. Fig. 6 is a detail in side elevation of the plow-raising mechanism, showing the conditions that exist when the plow is raised. Fig. 7 is a similar detail showing the conditions that exist when the plow is lowered. Fig. 8 is a detail in side elevation showing the position of the hand-lever preparatory to raising the plow.

A side bar of a plow-frame is shown at 1 and the rear end bar thereof at 1^a. At 2 is shown the rearward extension of the axle for the rear caster-wheel of the plow, and at 2^a is shown the vertical extension of such axle. The vertical part of the caster-wheel axle is journaled in a bracket 10, which is fastened onto the rear end bar 1^a of the planter-frame, and a collar 3 is fixed onto the upper end of the caster-axle by means of set-screws or the like. The collar has radial bosses or extensions 3^a, which are instrumental in controlling the swing of the caster-wheel and which are preferably utilized to form bearings for set-screws, by means of which the collar is rigidly fixed onto the axle-shaft. An arm 4 is pivoted on the axle-shaft below collar 3, and it has an upward-projecting stop 4^a, adapted to engage one of the extensions 3^a of the collar. Another arm 5 is pivoted on the axle-shaft below the collar, on the side thereof opposite arm 4, and it has an upward-extending stop 5^a, which is adapted to engage the other extension of the collar. The arms 4 and 5 normally extend in opposite directions from the shaft, as shown in Fig. 1, one of them bearing against stop projection 10^a of bracket 10 and the other bearing against the bracket through a downward-extended lug 5^b. (Shown in broken lines in Figs. 2 and 3 and in solid lines in Fig. 4.) Arm 4 is longer than arm 5, for a reason that will be hereinafter explained, and the shorter arm 5 is bored from front to back to admit a rod 8. The swinging ends of arms 4 and 5 are connected in the rear of the vertical extension of the axle-shaft by means of a toggle-joint composed of members 6 and 7, and the rod 8 connects pivotally with member 7 of the toggle-joint, extends through the bore in arm 5, and has its extended end threaded and provided with a nut. A compression-spring 9 is placed on the rod between the nut thereof and arm 5, and it tends by its elastic thrust to hold the members of the toggle-joint extended, as shown in Fig. 1. The relations of the extensions of the collar to the rearward extension of the axle of the caster-wheel are such that when the toggle-joint is extended by pressure of spring 9 the extensions of the collar will bear one against stop 4^a on arm 4 and the other against stop 5^a on arm 5 and hold the extension 2 of the axle in proper position to hold the caster-wheel against the vertical wall of the furrow. Under these conditions the toggle-joint bears against the collar 3 at its central joint, thus keeping the central pivot slightly out of alinement with end pivots, and the spring is enabled to rather stiffly maintain the operative—*i. e.*, the plowing—position of the caster-wheel.

It is the function of the rear caster-wheel to substitute rolling friction for the sliding friction of the landside by preventing the plow from crowding too strongly to land, and it is the most severe part of the work of the

spring and the toggle-joint to resist this tendency of the plow. For this reason the arm 4 is made longer than arm 5, so that the spring may have the advantage of the increased leverage in holding the plow against movement to land. When the plow is turned away from the land, to turn around at the end of the field the caster-wheel will press against the intact vertical wall of the furrow with sufficient force to break the toggle-joint, as shown in Fig. 2, and permit the caster-wheel to swing in the direction to facilitate the turn of the plow. In turning toward the land the caster-wheel is deprived of the resistance of the intact vertical wall of the furrow, and for this reason and for the further reason that swing of the caster-wheel away from the land does not need to be strongly resisted while plowing provision is made for breaking the toggle-joint with less strain. This provision consists of the shorter arm, whereby the toggle-breaking stress is applied closer to the pivot, and when a break is made in turning toward the land the conditions are somewhat as shown in Fig. 3. While the toggle-joint is resisting pressure tending to swing the caster-wheel to the right, the stress is exerted through stop 4^a and lug 5^b, and this condition is continued when the toggle breaks through excess of pressure, as shown in Fig. 2. When the tendency is for the caster-wheel to swing to the position shown in Fig. 3, the stress is exerted on stop 5^a and lug 10^a.

The lifting mechanism relates to that class of lifts in which the plow is held raised by foot-releasable locks, and it resides in a hand-lever which is automatically detached from the plow when the lift is completed. This arrangement enables the plow to be lowered without moving the hand-lever, and its utility lies in obviating the danger of the hand-lever striking an arm of the driver, as may happen when the hand-lever is forced rapidly upward and forward as the plow descends. In this instance the raising mechanism consists of a bracket-bearing 11, attached to a side bar of the planter-frame, as shown in Fig. 1, a shaft extended through the bearing, a rack 17, fastened onto one end of the shaft, an arm 12, fastened to the other end of the shaft, a foot-lever 16, fulcrumed on the frame and having a bell-crank extension, a bar 15 between the bell-crank extension of the foot-lever and the side extension 13 of arm 12, a link 14, connecting the swinging end of arm 12 with the plow-beam 17, and a hand-lever 18, adapted to engage the rack. The rack has a notch 17^a and a stop-finger 17^b, and the hand-lever has a tooth 18^a to engage the notch of the rack. The hand-lever also has a guard-finger 18^b, (shown in Fig. 5,) and its fulcrum end is slotted, as shown at 18^c in Figs. 6 and 8. The hand-lever is fulcrumed on the shaft that carries the rack 17 and the lever 12, and its rearward motion is restricted by a stop-bracket 20, which is attached to the plow-frame in the rear of the fulcrum of the lever. An extension-spring 19 is connected with bracket 20 and with the hand-lever near the fulcrum thereof, the connection being made with a lug on the lever which is under the fulcrum when the lever is swung back. This spring pulls the hand-lever backward lengthwise when the lifting action is completed, and the weight of the plow is sustained by the foot-releasable catch or other mechanism acting independent of the lever, with the result that the catch-tooth 18^a is drawn clear of the notch 17^a of the rack, as shown in Figs. 6 and 7.

Whenever it is desired to lower the plow, the foot-lever is given a forward kick, relieving the dead-center lock by which the plow is sustained, and the rack 17 and arm 12 swing to the position shown in Fig. 7, carrying the foot-lever forward sufficiently far to permit the arm 12 to pass and then returning it to its original position. This leaves the hand-lever resting on bracket 20 undisturbed by the descent of the plow and the movement of the rack, and when it is required to use the hand-lever to raise the plow the lever is first moved to the position shown in Fig. 8, where gravity and the pull of spring 19 will tend to force the catch-tooth of the lever into engagement with the notch of the rack, and the subsequent operation is obvious from the foregoing description.

As a matter of convenience in illustrating the action of the hand-lever, an opening is made through the lever at the location of the tooth of the lever and the notch of the rack, but this has no bearing on the invention.

The particular foot-released lock herein shown is well adapted to coöperate with, automatically, the detachable hand-lever, but it is only necessary to the function of the hand-lever that whatever plow-sustaining lock is used shall be releasable independent of the hand-lever.

What we claim is—

1. A caster-wheel controller for plows, comprising a pair of arms pivoted independently on the vertical extension of the caster-wheel shaft and extended in opposite directions, a toggle-joint connecting the ends of the arms, projections on the axle-shaft to bear against the arms, stops to hold the arms against swing in one direction and a spring to hold the toggle-joint extended.

2. A caster-wheel controller for plows comprising a pair of arms pivoted independently on the vertical extension of the caster-wheel shaft, and extended in opposite directions, a toggle-joint connecting the arms, a collar fixed on the shaft and having projections to engage the arms, stops to hold the arms from swinging away from the toggle-joint, a rod connecting with one of the members and extended through one of the arms and a compression-spring on the rod tending to hold the toggle-joint extended.

3. A caster-wheel controller for plows, comprising a pair of arms pivoted independently on the vertical extension of the caster-wheel

shaft, one of the arms being longer than the other, a toggle-joint connecting the ends of the arms, projections on the shaft to bear against the arms, stops to hold the arms from swinging away from the toggle-joint, and a spring acting through the short arm on the toggle-joint to hold the toggle-joint extended.

4. A caster-wheel controller for plows comprising a pair of arms, pivoted independently on the vertical extension of the caster-wheel shaft, one of the arms being longer than the other, a toggle-joint composed of members of unequal length connecting the ends of the arms together, the longer member of the toggle being connected with the longer arm, projections on the shaft to bear against the arms, stops to hold the arms from swinging away from the toggle-joint, and a spring acting on the shorter member of the toggle-joint through the shorter arm and tending to hold the toggle-joint extended.

5. The combination with plow raising and sustaining mechanism, of a hand-lever adapted to engage the plow-raising mechanism and automatically releasable therefrom when the plow is raised.

6. The combination with plow raising and sustaining mechanism, of a hand-lever adapted to engage the plow-raising mechanism and a spring to disengage the lever when the plow is raised.

7. The combination with plow raising and sustaining mechanism including a notched rack, of a hand-lever fulcrumed on the shaft of the rack by means of a longitudinal slot, a tooth on the lever to engage the notch of the rack and a spring to shift the lever on its fulcrum and draw the tooth out of the notch when the plow is raised.

8. The combination with plow raising and sustaining mechanism, of a foot-lever to release the plow, a hand-lever to raise the plow and a spring to disengage the hand-lever when the plow is raised.

In testimony whereof we sign our names in the presence of the subscribing witnesses.

WM. H. PARLIN.
EDWARD M. HEYLMAN.

Witnesses for W. H. Parlin:
GEORGE FRANCIS FAY,
H. H. B. EARNSHAW.

Witnesses for E. M. Heylman:
R. S. HORNISH,
W. A. BONE.