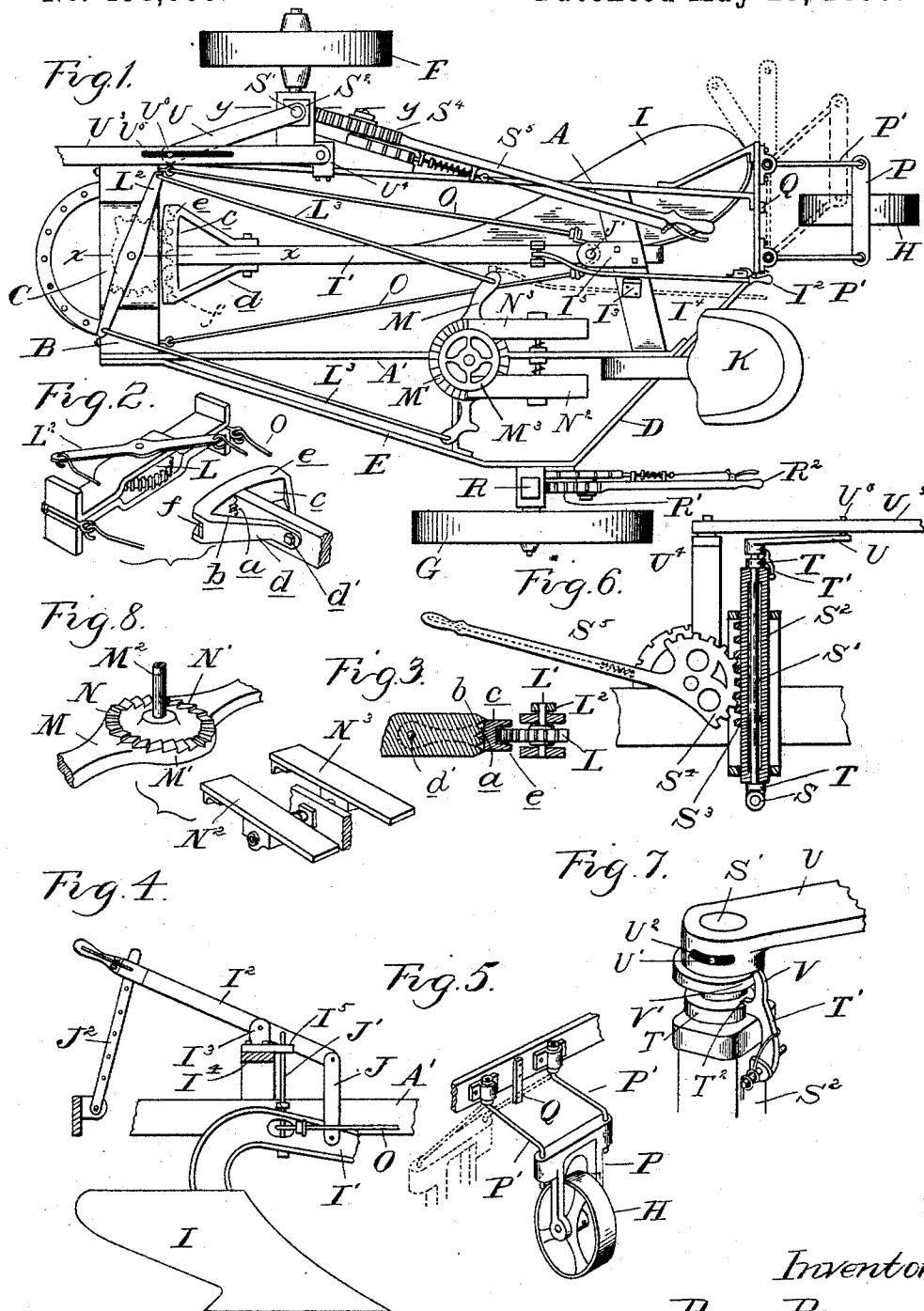


(No Model.)

P. RIES.
SULKY PLOW.

No. 498,030.

Patented May 23, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

PERRY RIES, OF GOODRICH, MICHIGAN.

SULKY-PLOW.

SPECIFICATION forming part of Letters Patent No. 498,030, dated May 23, 1893.

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To all whom it may concern:

Be it known that I, PERRY RIES, a citizen of the United States, residing at Goodrich, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Sulky-Plows, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar construction of the frame, the draft mechanism for the plow, and the devices for changing the line of draft. Further in the peculiar construction of a swiveled traction wheel, and of the mechanism for raising and lowering the same, and further in the peculiar construction, arrangement and combination of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a plan view of my improved plow. Fig. 2 is a detached perspective view of the front end of the frame, showing the parts detached to illustrate the construction of the steering and adjusting devices for the forward end of the plow beam. Fig. 3 is a cross section on line *x x* in Fig. 1. Fig. 4 is a vertical, central section through the rear end of the frame showing in elevation the device for vertically adjusting the rear end of the plow beam. Fig. 5 is a detached perspective view of the caster wheel. Fig. 6 is a vertical section on line *y y* in Fig. 1. Fig. 7 is a detached perspective view of the upper end of the standard for the swiveled traction wheel.

The frame of my plow preferably consists of two longitudinal bars *A* and *A'* connected together at the front by a cross-bar *B* consisting of two parts separated centrally to form a bearing *C* for purposes hereinafter set forth. The other end of the frame is formed by the diagonal cross-bar *D*, which extends some distance beyond the main frame and forms with the inclined bar *E* a side extension. This construction gives me a rigid and light frame which I support upon traction wheels *F* and *G* and the caster wheel *H* at the rear end.

I is the plow and *I'* the plow beam. This plow beam at its rear end is supported by the hand lever *I²*, pivoted in the bracket *I³* upon the arched cross bar *I⁴*, extending between the main bars *A* and *A'* of the frame. The lower end of this lever is connected to the

plow beam by means of a rigid link *J*. The plow beam is guided at its rear end by means of a guiding rod *J'* secured to the beam, passing therethrough and passing through a guide aperture in the bracket *I⁵*, on the cross bar *I⁴* as plainly shown in Fig. 4. The lever *I²* has a suitable spring catch to engage the notched bar *J²* and this lever is provided with a suitable handle in proximity to the seat *K* of the driver that he may raise and lower the plow at will.

At the forward end the plow beam is provided with notches *a* with which a tooth or ridge *b* on the plate *c* is adapted to engage and this tooth may be engaged in any of the notches, and thereby the forward end of the plow beam may have a slight vertical adjustment. The plate *c* is connected to the plow beam by means of the arms *d* and bolts *d'*. The forward face of this plate is provided at top and bottom with horizontal flanges *e* and between these flanges is a rack segment *f* adapted to engage with the pinion *L* pivoted in the bearing *C* of the main frame, the flanges *e* engaging above and below this pinion, and thereby preventing vertical movement of the plow beam. The pinion *L* is secured to its shaft *L'* which passes through the cross-bar *B* and has secured to it a lever *L²*.

L³ are connecting rods connecting the ends of the lever *L²* with the ends of the lever *M* pivoted in the bearing on the frame in advance of the seat *K*. This lever is provided centrally with a circular plate *M'* upon the opposite sides of which are the oppositely arranged ratchets *N* and *N'*, with which the spring foot pawls *N²* and *N³* respectively are adapted to engage.

M² is a shaft extending vertically above the lever *M* and *M³* is a hand wheel upon the upper end of said shaft. It is evident from this construction that if the operator releases one of the foot pawls and with the other foot presses upon the end of the lever *M* that he will turn the pinion *L* and thereby vary the line of draft of the forward end of the plow beam. This may also be accomplished by turning the hand wheel *M³*. When both pawls are engaged with their respective ratchets, the plow beam will be held firmly in its adjusted position.

O are draft rods connected to the opposite

ends of the cross-bar B and extending rearwardly to the rear end of the plow beam to which they are connected, preferably upon the guide rod J' through a central aperture in the plow beam as shown in Fig. 4.

The construction of the caster wheel H is as follows: P is an arched frame in which is journaled the wheel H and this frame is connected to the frame of the plow at the rear end by means of the links P', which at their rear ends are provided with cranks engaging in apertures in the arched frame, and at the forward end are provided with upwardly extending cranks engaging in bearings at the rear end of the plow frame. These links incline from their forward ends to their rear ends and are preferably arranged so that the points within their pivotal bearings form a parallelogram. The result of this structure is that as the draft of the plow which has the wheel H will constantly maintain a position parallel with the line of draft, thereby preventing the side motion to the rear of the plow, which is present in the ordinary pivoted caster wheel. In the turning of the plow the caster wheel will maintain its parallel relation with the line of draft until the links are moved parallel with the rear cross bar of the frame, when one of them will strike the stop Q on the frame, and the caster wheel will then turn about the pivot of the other link, as shown in dotted lines in Fig. 1.

The traction wheel G is secured on the stub shaft which is supported on a vertical standard R which is provided on its side with a rack, with which the segmental gear R' engages, this gear being formed on the end of the adjusting lever R² which is arranged in proximity to the driver's seat, so that this wheel may be raised or lowered as desired. The traction wheel F is normally held rigidly in the position shown in Fig. 1 but it is adapted (to assist in turning a sharp turn) to swivel when turning.

The construction which I preferably employ for obtaining a normally rigid traction wheel which will swivel in turning and is adjustable vertically is as follows: The wheel F is journaled on the stub shaft S which is secured to the vertical standard or shaft S'. This shaft passes through a squared or angular standard S² slidably engaging in bearings upon the frame (see Fig. 6). The squared standard and the shaft S' are vertically adjustable by means of the rack S³ on the side of the squared standard with which the segmental pinion S⁴ on the hand lever S⁵ engages. This lever extends into proximity to the driver's seat, so that he may control the raising or lowering of the wheel. The shaft S' is provided at each end of the squared standards with the collars T. The shaft S' and the standard S² are normally coupled together by means of a spring latch T' pivoted on the squared standard at the top and engaging in a notch T² in the upper collar on the shaft, as shown in Fig. 7. U is a crank arm secured

to the upper end of the shaft S' and having a limited turning movement thereon. This is accomplished by means of the pin U' on the shaft entering the slot U² in the head of the crank arm. U³ is a guiding tongue pivoted to a standard U⁴ upon the frame which extending forwardly passes between the horses to which it is attached in any desired manner. U⁵ is a longitudinal slot in the tongue and U⁶ a pin upon the free end of the crank arm U engaging in said slot, all so arranged that the tongue when moved through a limited angle in either direction will turn the crank arm U without turning the shaft S' (which latter is locked from movement by the latch T') but in the further movement of the tongue the pin U will reach the end of the slot U' and at the same time the latch T will have been released by the finger V on said latch running up the incline V' on the head of the crank arm U. The shaft S' and traction wheel G will then be turned by the tongue acting as a caster or swivel wheel in turning.

I believe I am the first to construct a caster wheel in a sulky plow held normally in the line of the draft with a limited lost motion which is adapted to swivel in turning beyond that limit. Also that I am the first to construct such a wheel with means for its vertical adjustment.

What I claim as my invention is—

1. In a sulky plow, the combination with the wheeled frame, of the plow beam supported in the frame, draft rods connecting the rear end with the front of the frame, and means for adjusting the front end of the plow beam laterally, substantially as described.

2. In a sulky plow, the combination with the wheeled frame, of a plow beam carrying a plow, a support for the forward end of the beam, a lateral adjustment in said support, draft rods connecting the front of the frame with the rear of the plow beam and a vertical adjustable support for the rear end of the plow beam, substantially as described.

3. In a sulky plow, the combination with the wheeled frame, of a plow beam carrying a plow thereon, supported in the frame, a support for the forward end of the plow beam, having vertical and lateral adjustments, a vertically adjustable rear support for said beam, and draft rods connecting the front of the frame with the rear end of the plow beam, substantially as described.

4. In a sulky plow, the combination with the wheeled frame, of the plow beam carrying the plow, supported in the frame, a rack segment at the forward end of the beam, a pinion journaled in the frame and engaging said rack, and levers connecting the pinion with an adjusting device under the control of the operator, substantially as described.

5. In a sulky plow, the combination with the frame, the plow and plow beam supported in the frame, of the rack segment at the forward end of the plow beam, the over-hanging flanges

e, the pinion R engaging the rack within said flanges and means for actuating the pinion, substantially as described.

6. In a sulky plow, the combination with the frame, the plow and plow beam supported in the frame, of the rack segment at the forward end of the plow beam, the pinion journaled in the frame and engaging said segment, a lever L² secured to the shaft of said pinion, a lever M pivoted in proximity to the driver's seat, connecting rods between the ends of the two levers, and pawls for holding the levers in their adjusted positions, substantially as described.

7. In a sulky plow, the combination of the plow beam, adjusted at its forward end by means of a rack, and pinion, the levers L² and M for actuating said rack, the oppositely arranged ratchets N and N' on the lever M, and the foot pawls N² and N³ adapted to engage said ratchets, substantially as described.

8. The combination with the frame and traction wheels, of a sulky plow, of a caster wheel having its frame connected to the plow frame by means, of parallel links pivoted at each end, substantially as described.

9. In a sulky plow, the combination with the frame and traction wheels, of a caster wheel journaled in a frame, of parallel links pivoted in the frame at their forward ends and to the caster wheel frame at their rear ends and inclined from their forward ends downward, substantially as described.

10. In a sulky plow, the combination with the frame and traction wheels, of a caster wheel journaled in a frame, of the links P' having oppositely turned cranks at each end, pivoted respectively in the plow frame and caster

wheel frame, and inclined from their forward ends downwardly, and a stop Q on the frame, substantially as described.

11. In a sulky plow, the combination with the frame, of a traction wheel normally rigid, a steering pole having a limited play and a connection from said steering pole to the caster wheel, whereby when the steering pole is moved beyond its limit of movement said traction wheel swivels, substantially as described.

12. In a sulky plow, the combination with the frame and the traction wheels, one of said wheels being a swivel wheel, a lock applied to the swivel, a steering pole having a connection to said lock and adapted to release the same after a limited lost motion, substantially as described.

13. In a sulky plow, the combination with the frame, and traction wheels, one of said wheels being a swivel wheel, a spring lock applied to the swivel, a steering pole having a connection to said lock adapted to release the same after a limited lost motion, and to lock the same when returned to its normal straight position, substantially as described.

14. In a sulky plow, the combination with the frame and traction wheels, one of said wheels being a swivel wheel, normally held locked in a straight position, a steering pole controlling said lock and means for vertically adjusting said wheel, substantially as described.

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

PERRY RIES.

Witnesses:

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CALVIN BUNNELL.