B. C. BRADLEY & C. A. HAGUE.

Sulky-Plow.

No. 200,249. Patented Feb. 12, 1878.

Fig. 1.

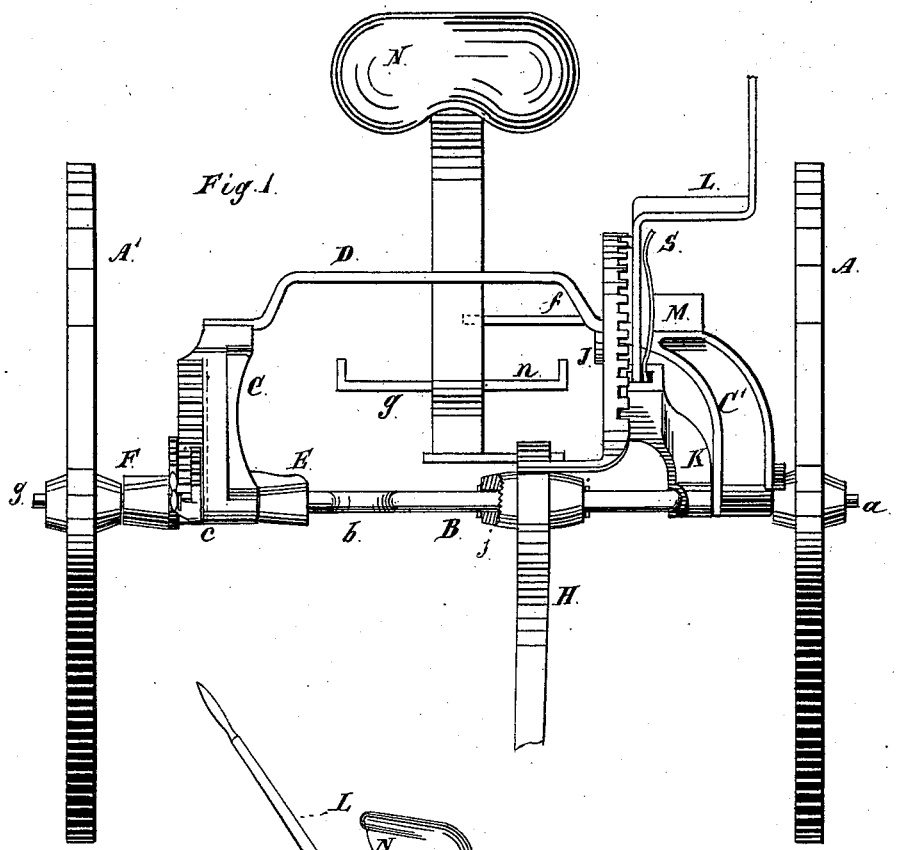


Fig. 2.

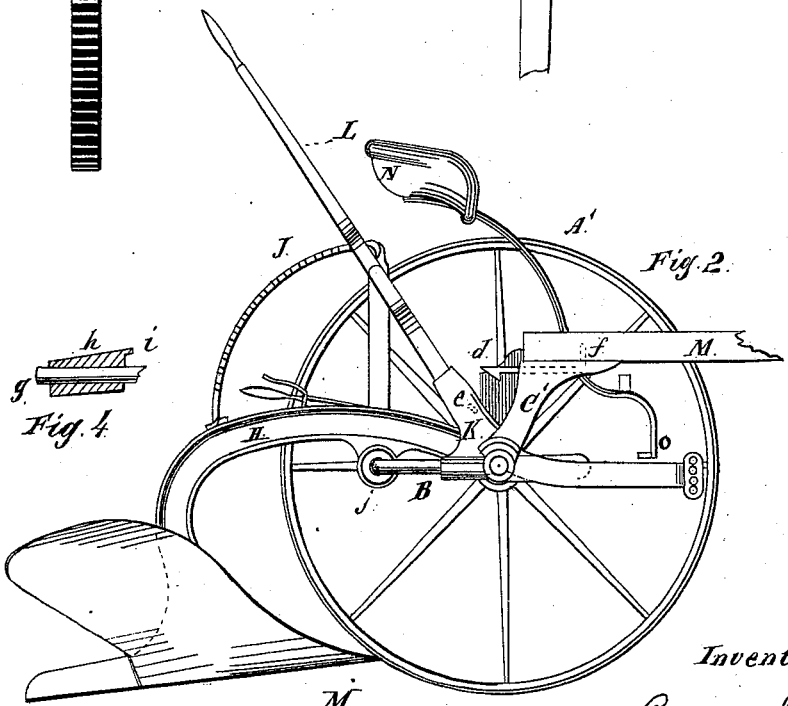


Fig. 3.

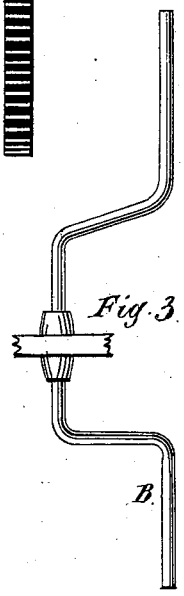
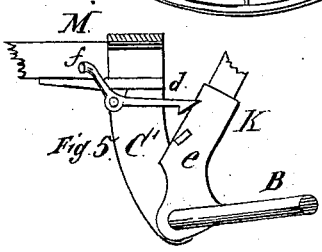


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

BYRON C. BRADLEY AND CHARLES A. HAGUE, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN SULKY-PLOWS.

Specification forming part of Letters Patent No. **200,249**, dated February 12, 1878; application filed July 28, 1877.

To all whom it may concern:

Be it known that we, BYRON C. BRADLEY and CHARLES A. HAGUE, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Sulky and Gang Plows, of which the following is a full description, reference being had to the accompanying drawing, in which—

Figure 1 is a rear elevation; Fig. 2, a side elevation with one of the wheels removed, and Fig. 3 a plan of the crank and beam attached thereto. Fig. 4 represents a sleeve used on the axles. Fig. 5 is a detail.

This invention relates to devices for regulating the depth of the plowing and for lifting the plow out of the ground; also to a removable sleeve, by the use of which the pitch and gather of the wheels may be adjusted and the sleeve renewed when worn.

That portion of our invention which relates to the regulating and lifting devices is designed to be used with plows in which the plow-beam is pivoted or hinged to a crank-axle; and it consists in a lever attached directly to the axle, and arranged to engage with a rack or some other suitable device connected with the plow-beam, so that when the plow is in use and the lever engaged with such rack or other device the plow cannot turn upon the crank, nor the crank turn in the socket connected with the beam, while the crank is free to turn in its bearings, while at the same time the plow can be lifted out of the ground by the use of this same lever.

In the drawings, A A′ represent the wheels. B is a crank, one end of which is provided with a spindle, *a*, to receive the wheel A. The other end, *b*, of this crank ends at the point *c*, the other wheel, A′, being located upon an independent spindle, rigidly secured to an arm, F, which arm is pivoted at its forward end in a socket in another arm, E, which is hinged upon the crank B. C C′ are two brackets, hinged upon the crank B. D is a cross-bar, permanently secured to the upper ends of the brackets C C′. H is a plow-beam. It is hinged to the outer or swinging portion of the crank B in such manner that it cannot move thereon longitudinally. This can conveniently be done by means of a long socket or hub, *j*, permanently secured to the under side of the beam, through which socket the crank passes.

J is a rack, attached at its ends to the plow-beam. K is a casting, having at the lower end two flanges, at right angles to each other, which are fitted and secured in the angle of the crank in both portions thereof. The upper end of this casting has a socket.

L is a lever, permanently secured in the socket in K. Practically K L together form the lever.

S is a spring, the lower end of which is secured in the socket in K, and the upper end of which rests against the lever. The lever has a projection on the inside to engage with the notches in J, and the spring holds the lever against the rack. A spring-lever, L, might be used, and the spring S dispensed with.

M is the tongue, which is secured to the bracket C′. N is the seat, which is supported upon a bar attached to the cross-bar D. The lower end of this bar extends some ways below D, and upon the lower end thereof is a short cross-bar, which serves as a stop, *o*, for the front end of the plow-beam.

d is a hook or latch, pivoted to the inner end of the bracket C′. *e* is a pin or catch upon the inside of K, with which the latch *d* engages when the plow is above the ground. This latch can be lifted by the foot of the driver pressing upon the forward end, or the extension *f* thereof. *n* is a foot-rest for the driver.

It will be observed that the lever L has no connection with the tongue, directly or indirectly, but that it is practically permamently secured at its lower end to the crank B, so that when engaged with the rack J the tongue is loose and free to move up and down. At the same time the plow will be held rigidly upon the crank by means of the lever and rack, and the plow-beam cannot turn in the crank, neither can the crank turn in the socket upon the beam, but the crank can turn in the bearings at its ends.

By means of the lever, which can be made to engage with the rack at different points, the depth of the plowing can be adjusted.

When the lever is disengaged from the rack

by lifting thereon, the crank can be lifted, turning in its bearings, thus raising the plow entirely out of the ground, and it can be there held by means of the latch *d* engaging with the pin *e*. In doing this the front end of the beam will first be raised until it comes in contact with the stop *o;* then, as the crank continues to rise, the front of the beam will be depressed, and the heel of the plow raised.

When the lever is disengaged from the rack the plow-beam is free to move upon the crank-axle, so that, as it is raised or lowered to adjust the depth of plowing, these parts adjust themselves to each other.

Instead of the rack shown, the lever might be made to engage with and operate a clutch placed upon the crank, and arranged to engage with notches in the socket, or with some device attached thereto, which will accomplish the same result; but we think the construction shown is the most desirable.

The essential feature of this portion of our invention consists in so constructing and arranging the parts that a plow-beam which is socketed upon a crank can be at pleasure practically rigidly connected with the crank, so that the plow, having been once set, its position will remain the same unless changed by the operator. In different conditions of soils, with our construction, if the plow runs from hard to soft soil, the depth of the cutting will be the same, since the weight of the machine and driver must be raised in order to raise the plow even partially out of the ground.

In Fig. 4 we have shown a device for adjusting the pitch and gather of the wheels, which consists in a removable sleeve, the hole through which for the axle is not parallel with the axis of the sleeve, but is somewhat diagonal thereto, as shown in Fig. 4, in which *g* is the spindle, *h* the sleeve. As shown, the hole for the spindle is not concentric with the end of the sleeve at either end. It might be concentric at the outer end.

i is a projection on the inner end of the sleeve, adapted to engage with a corresponding recess in that part of the machine with which the inside of the hub of the wheel comes in contact, so that the sleeve cannot rotate on the spindle, but the wheel rotates on the sleeve.

The recess which receives the projection *i* may be located on the top, or on either side of the part in which it is placed, and its position, *i*, remaining unchanged on the sleeve, determines the pitch and gather of the wheels.

The sleeve can be replaced when worn, and the axles or spindles remain unworn.

Our improvements may be used with a machine having a continuous crank-axle, adapted to receive a wheel on each end. As we have described the machine, one wheel is upon one end of the crank, the other is upon an independent spindle, which construction has been adopted in connection with certain devices for leveling the plow transversely.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a sulky or gang plow, a plow hinged upon a crank, in combination with a lever permanently secured to the crank, and a rack or other equivalent device connected with the plow-beam, for the purpose of raising and lowering the plow independently of the frame, and locking the plow when in use, so that it cannot turn on the crank, substantially as specified.

2. A plow-beam hinged to a crank, B, in combination with the frame C D supporting a seat, tongue M, stop *o*, lever L, and rack J, substantially as and for the purpose set forth.

3. The sleeve *h*, provided with spur *i*, to fit a corresponding recess in the spindle-arm, and having the hole that receives the spindle diagonal to or not concentric with the circumference of the sleeve, whereby the sleeve is prevented from turning upon the spindle, and the pitch or gather of the wheel is regulated, substantially as specified.

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