



# UNITED STATES PATENT OFFICE.

JOHN REYNOLDS, OF NEW YORK, N. Y.

## IMPROVEMENT IN STEAM-PLOWS.

Specification forming part of Letters Patent No. 30,986, dated December 18, 1860.

*To all whom it may concern:*

Be it known that I, JOHN REYNOLDS, of the city, county, and State of New York, have invented a new and useful Improvement in Plows which are Operated by Steam; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view, Fig. 2 a vertical longitudinal section, and Figs. 3, 4, and 5 details, of my invention.

Similar letters of reference in each of the several figures indicate corresponding parts.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents a three-cornered frame, with a gang of plows, A', arranged on its rear oblique-set timber, *a*.

B is a carriage-frame, supported by three wheels, C C C', and having an upright boiler, D, two inclined stationary-engine cylinders, D' D', a water-tank, E, and a wood-receptacle, F F' F<sup>2</sup>, arranged upon it. To the rear edge of this carriage-frame the front timber, *b*, of the plow-frame A is attached by means of vertical slotted standards *c c*, a pivoted link or bar, *d*, a rock-shaft, *e f*, a link, *d'*, and a grooved disk-crank, *g*, all arranged as represented. The connection is such that the frame A, with its plows A', rises and falls bodily in a straight or perpendicular line.

In order to support the longest end of the plow-frame, a side wheel, H, is provided, said wheel turning on an axle, I, bolted to the top of frame, and having its journal set eccentric, so that by simply turning it upside down the wheel may be thrown up or down, and thus the plows caused to enter the ground to a greater or less depth.

The elevation of the frame A, with its plows and side supporting-wheel, is effected by means of chains J J' and windlass K L. The chain J passes down from near the center of the windlass-shaft K and attaches to the circumference of the grooved disk-crank *g*, while the chain J' passes down from the rear extremity of the said shaft and attaches to the rear end of the side timber, *b'*, of the plow-frame. By this arrangement the plowman can, by turning the crank L' of the windlass, wind the chains upon the shaft-K, and by doing this the outer cor-

ner of the frame is raised by the chain J', while the front portion at one end is raised by the link *d'*, which is drawn up by the disk-crank *g*, and at the other end by means of the link *d*, which is drawn up by the arm *f* of the rock-shaft. Thus arranging the mechanism for adjusting the plow-frame in a perpendicular line greatly lessens the labor of the plowman, as considerable leverage is obtained, and also enables him to more speedily elevate the plows whenever an obstruction is to be passed, they rising straight out of the ground instead of dragging up through it in an oblique direction.

The boiler D is located centrally, being in an upright position, within an open space formed in the bottom of the carriage-frame, and just in front of the carriage-axle and above the double-crank shaft M of the engine-cylinders D' D'. The cylinders D' D' are set inclined and occupy a position forward of the boiler, with which they communicate by means of a steam-pipe, N N' N'. On each side and in rear of the boiler the wood-receptacle F F' F<sup>2</sup> is constructed, the bottom of the portions F' F<sup>2</sup> of said receptacle being convex and concentric with the axis of the wheels C C in order to provide room for said wheels to revolve in.

The water-tank is located behind the boiler, and at an elevation which brings its top edge nearly as low as the bottoms of the boiler. A frame, U, suspended from the carriage-frame and partly supported by the lever-clutches T T, holds the tank in position.

Communication to the tank is afforded through the space which is formed in the bottom of the carriage-frame to admit of the introduction of the boiler.

The front or steering wheel, C', is arranged to turn on a vertical shaft, *n*, which passes through the platform *m* of the frame B. On the shaft *n*, below the platform, a cog-wheel, *o*, is arranged, and into this cog-wheel a pinion, *p*, gears, said pinion being on the lower end of a vertical crank-shaft, *q*, which extends up above the platform and answers as a means whereby to adjust the steering-wheel.

The motion from the engine-cylinders is transmitted through the crank-shaft M, pinions Q, and spur-wheels R to the carriage-wheels C C. The spur-wheels are attached fast to axle S, while the wheels C C are arranged loose on the same. Lever-clutches T, which are operated by crank-shafts *r*, encompass the axle, but

slide loosely on the same. The pins *tt* of these clutches pass through holes in the hub of the spur-wheel R, and are guided by opposing inclined grooves *uu* of the hubs of the wheels C into pin-holes *vv*, when the clutches are adjusted for throwing the steam mechanism in gear with the carriage. By this arrangement the necessity of having the spur-wheels to slide on the axle is obviated, and a very speedy connection and disconnection can be effected.

Fig. 5 represents a modification of one of the wheels C. In this case the rim of the wheel is made of corrugated iron, in order that it shall possess great strength and at the same time present an uneven surface to the ground. The corrugations dispense with the use of spurs or ribs to prevent slipping of the wheels.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement and combination of the plow-frame A with plows A', vertical slotted standards *c*, link *d*, rock-shaft *ef*, grooved disk-

crank *g*, link *d'*, chains or cords J J', and windlass-shaft K, substantially in the manner and for the purpose described.

2. The arrangement and combination of the fast spur-wheel R, sliding lever-clutch T *tt*, and loose wheel C *uu vv*, substantially as and for the purposes described.

3. The arrangement of the plow-frame A with plows A', boiler D', wood-receptacle F F' F<sup>2</sup>, water-tank E, specified mechanism for throwing the engine in connection with the carriage B, and the mechanism specified for supporting and adjusting the plow-frame and plows, the whole constructed and operating together in the manner described.

Signed and witnessed this 5th day of December, 1860.

JOHN REYNOLDS.

Witnesses:

G. F. G. DIETERICH,  
GOODWIN Y. AT LEE.