

J. A. SUTHERLAND.
Gang-Plow.

No. 162,115.

Patented April 13, 1875.

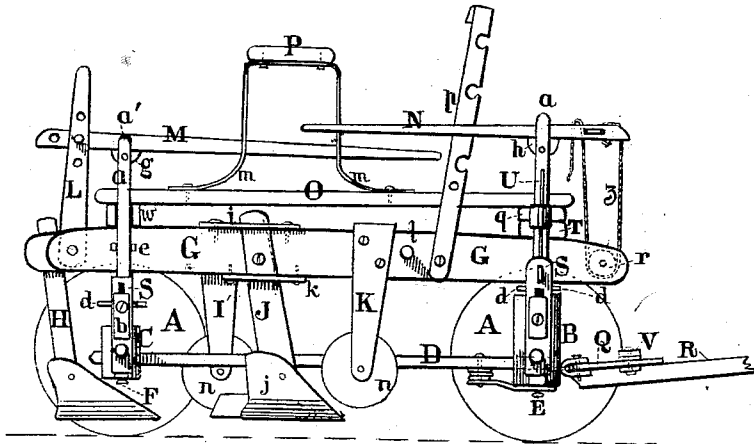


Fig. 1.

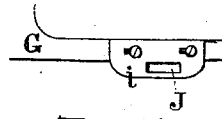


Fig. 5.

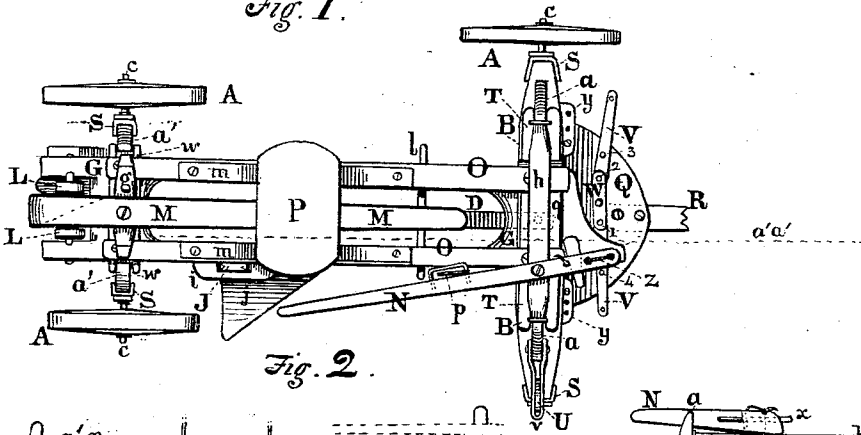


Fig. 2.

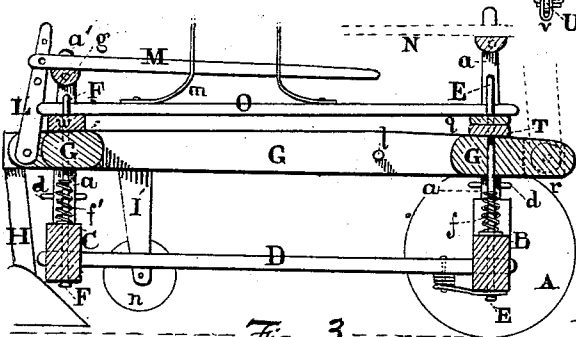


Fig. 3.
(ref. sec. in line a'a' fig. 2.)

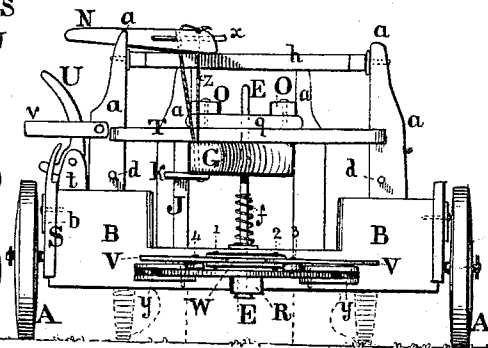


Fig. 4.

Witnesses
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in fact.

UNITED STATES PATENT OFFICE.

JAMES A. SUTHERLAND, OF ELMWOOD, ILLINOIS.

IMPROVEMENT IN GANG-PLOWS.

Specification forming part of Letters Patent No. 162,115, dated April 13, 1875; application filed December 5, 1874.

To all whom it may concern:

Be it known that I, JAMES A. SUTHERLAND, of Elmwood, in the county of Peoria, in the State of Illinois, have invented an Improvement in Gang-Plows; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a side elevation; Fig. 2, a plan view; Fig. 3, a vertical section on line *a' a'*, Fig. 2; Fig. 4, view of front end of machine; Fig. 5, a plan view of plow-stem plate.

This is a four-wheeled gang-plow, the axles being connected by a "reach," and the forward axle pivoted on a king-bolt. From each axle rises a pair of standards, between which the frame which carries the plows is raised or lowered adjustably by levers connected to rods or ropes at either end of the frame to level or adjust the plow. The furrow-wheel is lowered or raised, as are, indeed, all the wheels, by adjustable axles, which project from sliding plates, adjustable upon the ends of the wooden (so called) axles. The heel of the tongue is adjustably set in a plate or base which slides horizontally to the right or left hand, in taking more or less land, in clevises or hinges upon the front (wooden) axle; and connected levers, pivoted on said plate, equalize the draft upon the machine for the use of three or four horses, one traveling in the furrow. The plows are independently adjustable higher or lower, within staples or plates on the plow-frame, the upper plate also allowing the plow at the point or heel to be inclined at the same time. Spiral springs, coiled around the king-bolt and around the corresponding rear bolt or rod upon which the plow-frame slides vertically, receive the weight of the latter and allow the plows to pass through uneven ground without rising or falling with the wheels.

In the drawings, A A A A represent the wheels, each mounted on a short independent axle, set in a sliding shoe, S, which clasps adjustably the end of the wooden axle-trees B C; B, the forward axle-tree, pivoted upon the end of the reach D upon the king-bolt E, and

from which rise the standards *a a* which support the lever-roller *h*, and between which rises and falls the bolster T, which supports the seat-frame O *q*. A pin, *d d*, in each standard supports the ends of said bolster when the plows are at work. C, the rear axle-tree, secured to the reach D, and provided with similar standards *a' a'*, lever-roller *g*, bolster *w*, and pins *d d*. This axle-tree is shorter than the front one, to allow the wheel on one side to run in the furrow formed by the plow in front of it, J, while the wheel on this same side on the forward axle runs in the furrow formed by the preceding passage of the machine. D, the reach; E, the king-bolt, which passes up through axle-tree B, and freely through the spiral spring *f*, the front end of the plow-frame G, bolster T, and cross-bar *q* of the seat-frame O. The spring *f* is designed to support the plow-frame when plowing. F, a vertical bolt or rod, which connects the rear axle C with reach D, and passes freely upward through the plow-frame G and seat-frame O. A spiral spring, like that on the king-bolt, encircles said bolt at the base, and for the like use. G, the plow-frame—a horizontal oblong frame—to each side of which a plow, H J, is attached, with cutters I K, and is adjustably raised or lowered on the guides or vertical bolts E F, and between the standards *a a' a'*, by means of rods L L, rope or chain Z, and levers M N at front and rear. Said rods or links L L are each pivoted to the rear of plow-frame G, and have one or more holes to receive a pin to adjust them to the rear end of the lever M, whose fulcrum is a roller, *g*, pivoted in the tops of the standards *a' a'*. The handle of said lever M passes beneath the driver's seat, to be managed by his foot. N, the forward plow-frame lever, in like manner having a roller, *h*, for its fulcrum, pivoted in top of the standards *a a* of the axle-tree B, and connected with a pulley, *r*, on the front of the plow-frame by a chain or rope, Z, the slack of which is held by a wedge and mortise in the lever, or a similar fastening. The handle of said lever is engaged by the vertical ratchet-rod *p* on the plow-frame G. O is the frame which sustains the driver's seat P, which rests at each end on the bolsters T *w*, the ends of which are slotted to slide upon the standards *a a' a'*. This frame,

at its ends, also slides upon the vertical bolts E F. Q, a plate, which connects the tongue R with the wooden axle B, adjustably, to right or left, by means of the grooved hinges *y y* in which said plate slides, and is fastened by bolts or such like device; S, shoes, which clasp the end of each wooden axle-tree, and from each of which a short independent axle projects, and which are adjustable by set-screws or bolts at different levels, for leveling the machine, or for lowering the wheels into the furrows; U, a lever, pivoted upon the axle-tree B, having a short arm, which enters a slot in one of the axle-shoes S, and is used in laying out land; V V, a draft-equalizer, for the use of three horses, composed (in a common mode) of unequally-pivoted arms, pivoted to the plate Q in a line across said plate, and connected by a link, W. To the shorter lever a single horse will be attached, so as to enable him to walk in the furrow, and to the longer one two horses will be attached.

The operation of this plow is as follows: The plows H J are raised or lowered together, by the levers M N at either end of the frame G, to which they are connected by links L L and chain Z; the driver's-seat frame going with said plow-frame as far downward as the pins *d d d*, where the bolsters T w are caught by the same pins at each end to relieve said plows of the driver's weight when plowing; and in passing through uneven ground the plows are prevented from rising and falling with the wheels by the resting of the plow-frame, at each end, upon the spiral springs *f f'* on the vertical bolts E F. The links L L can be shortened or lengthened by means of a pin and adjusting-holes in the same, and the chain Z similarly so, by taking up the slack of the same by means of the wedge and mortise in the lever. The rear plow H and colter I are removable when it is desired to

use one plow alone, and the latter or forward one is adjustable at different levels by a set-screw in the frame G, and also adjustable at the point of the plow by means of the sliding plate *i*. The wheels are all adjustable at desired levels by means of the movable axles and shoes S S S S, particularly the wheels on one side, which must travel in furrows, the forward plow covering the furrow made by the previous passage of the machine, and the rear plow covering that made by the forward plow. The forward axle-tree is of such a length that the wheel on one side travels in a furrow made previously, and the hinder axle-tree is shortened so as to permit one of the hind wheels to travel in the furrow made by the forward plow. The front axle is pivoted on a king-bolt, and the attached tongue-plate Q is adjustable to the right or left in taking more or less land in plowing; and the lever U is used to level the wheel below in marking out land.

What I claim as my invention is—

1. In a four-wheel gang-plow the axle-trees B C, having standards *a*, provided with pins *d*, in combination with bolsters T w and adjustable plow-frame G, constructed to operate substantially as and for the purpose set forth.

2. The combination of the adjustable plow-frame G, carrying the plows H J, and colters I K, seat-frame O, bolsters T w, bolt-rods E F, springs *f f'*, standards *a a*, pins *d*, and axle-trees B C, substantially as and for the purposes set forth.

In testimony that I claim the foregoing, gang-plow, I have hereunto set my hand this 20th day of November, A. D. 1874.

JAMES A. SUTHERLAND.

Witnesses:

CLARENCE THURLOW,
H. W. WELLS.