



# UNITED STATES PATENT OFFICE.

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## STEAM GANG-PLOW.

SPECIFICATION forming part of Letters Patent No. 316,846, dated April 28, 1885.

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*To all whom it may concern:*

Be it known that we, WILLIAM H. SNYDER and ABRAHAM O. FRICK, citizens of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Steam Gang-Plows; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that type of steam gang-plows wherein the gang of plows is drawn by a traction-engine.

Our improvement consists of certain features of construction, and of certain combinations of mechanical devices, all specifically pointed out in the claims at the close of this specification.

The practical application and *modus operandi* of the several parts of our invention are clearly set forth in the following detailed description, aided by the annexed drawings.

Figure 1 is a plan view of our improved steam gang-plow, some parts being broken away and only the rear part of the traction-engine being shown in outline. Fig. 2 is a side elevation of the same, showing, however, but a single plow. Figs. 3, 4, and 5 illustrate, on a larger scale, certain parts detached.

The same letters of reference indicate identical parts in all the figures.

Each individual plow, A, of the diagonal gang of plows is independently hitched by the following coupling to a diagonally-arranged pipe, B—either a cast pipe or an ordinary gas-pipe—which serves as a tubular diagonal hitching-beam. The pipe is embraced by the diagonal sleeve of a clip composed of the parts C and C', each of which parts furnishes a half of the diagonal sleeve. The part C' has a rearwardly-projecting tubular neck, c', terminating in a circular flange, c<sup>2</sup>, while the part C has a forwardly-projecting tubular boss, c. When the clip is properly applied to the diagonal tubular hitching-beam, the neck c' and boss c are in line with each other and with the beam of the plow, the forward end of which is pivoted between the cheeks of the coupling-head C<sup>2</sup>. This coupling-head is vertically

elongated, so as to permit the plow-beam to vibrate up and down on the pivot-pin—an ordinary break-pin—and its cheeks are provided with vertical series of holes to provide for vertical adjustment of the pivot-pin of the plow-beam. The short forwardly-projecting neck of the coupling-head is tubular and terminates with a circular flange, c<sup>3</sup>. The adjacent faces of the flanges c<sup>2</sup> and c<sup>3</sup> are provided with radial serrations adapted to interlock, as clearly shown in Fig. 3. The coupling-head is fixed to the clip, and the two parts of the clip clamped to the tubular beam B by a single bolt, C<sup>3</sup>, as clearly shown in Fig. 3, holes being bored through the tubular beam at opposite sides for the passage of the bolt, the screw-threaded front end of which is provided with a nut, c<sup>4</sup>. The head of the bolt is so formed that it cannot turn in the coupling-head. On loosening the nut c<sup>4</sup> the serrations on the flange of the coupling-head may be separated from the serrations on flange c<sup>2</sup> and the coupling-head turned on its longitudinal axis in either direction, so as to cant the plow-beam for the purpose of throwing the plow more or less into land. To counteract the tendency of the parts C and C' of the clip to slip on the tubular beam, I construct them with interlocking shoulders c<sup>5</sup> c<sup>6</sup>.

The diagonal tubular hitching-beam is supported on and drawn by two draw-bars, D and D', which are respectively connected at their forward ends to the downwardly-projecting hitching-arms E and E' on the traction-engine, said hitching-arms being provided each with a vertical series of holes, so that the draw-bars may be connected thereto at any required height. The tubular hitching-beam passes through a suitable hole, d, in the rear end of each draw-bar. To prevent the tubular hitching-beam from sliding endwise, the draw-bars may be arranged on it close to two of the clips, on opposite sides thereof; or else suitable extra-stop means may be applied to that end. The hitching-beam may also be connected with the hitching-arms E E' by cross-braces E<sup>2</sup> E<sup>3</sup>, as shown in Fig. 1, which cross-braces will also effectually prevent end play of the hitching-beam on its draw-bars. The rear end of each draw-bar is supported upon a wheel, F, jour-

naled on a stud of a stock, G, one arm, *g*, of which passes forward under the tubular hitching-beam, and is pivoted to the draw-bar at *g*<sup>2</sup>, while an upwardly-projecting slotted curved arm, *g*<sup>1</sup>, thereof is clamped to the draw-bar in rear of the tubular hitching-beam by a clamping-bolt, *g*<sup>3</sup>. On loosening the nut of clamping-bolt *g*<sup>3</sup>, the draw-bar, with its adjuncts, may be moved up or down on stock G, so as to raise or lower the front ends of the plow-beams, whereby the depth of the furrow is determined. These wheels F thus serve both as supporting-wheels and as gage-wheels.

At a point well forward the plow-beams are connected each by a separate chain or rope, *h*, to a diagonal lifting-bar, H, suspended from the upper ends of the fixed crane-posts I and I' by hoisting chains or ropes *i* and *i*'. The crane-posts are fixed to the frame-work of the traction-engine, and should be suitably braced. The hoisting-ropes *i* and *i*' are secured to a transverse winding-drum, K, which is provided with a worm-wheel, *k*, for turning it by means of a worm, *l*, on an upright shaft, L. The winding-drum and its gear are shown as mounted on the traction-engine frame.

In hoisting the plows out of the ground the front ends of the plow-beams, together with the hitching-beam and adjunct, are lifted first, because these parts have rather less weight than the rear ends of the plows, the shares of which are, besides, embedded in the ground. The first lifting will therefore tilt the plows up, so as to give the plow-shares an upward pitch, causing them to run up out of the ground as the machine progresses. The forward ends of the plows continue to be lifted until they strike the stop-bars M M', which depend from the crane-posts. After that the rear ends of

the plows will be lifted, the winding up of the hoisting-ropes being continued until the plows are raised to a proper height above the ground.

We claim as our invention—

1. The combination, substantially as before set forth, of the draw-bars attached to the traction-engine and provided with transverse holes at their rear ends, the diagonal hitching-beam passing through the holes in the rear ends of the draw-bars, the wheels for supporting the rear ends of the draw-bars, and the plows coupled to the hitching-beam.

2. The combination, substantially as before set forth, of the diagonal hitching-beam, a coupling applied thereto composed of a two-part clip with a coupling-head and a bolt for securing the parts to said beam, and the beam of a plow.

3. The herein-described coupling, composed of a two-part clip forming a divided diagonal sleeve with interlocking shoulders, a coupling-head adjustable by turning it on its longitudinal axis on the clip, and a single bolt, the whole adapted for use substantially as before set forth.

4. The combination, substantially as before set forth, of the gang of plows, the hoisting-rig on the traction-engine, the diagonal lifting-bar of which is connected with the forward ends of the plows, and the stop-bars.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. SNYDER.  
ABRAHAM O. FRICK.

Witnesses:

S. M. STOLER,  
D. M. GOOD, Jr.