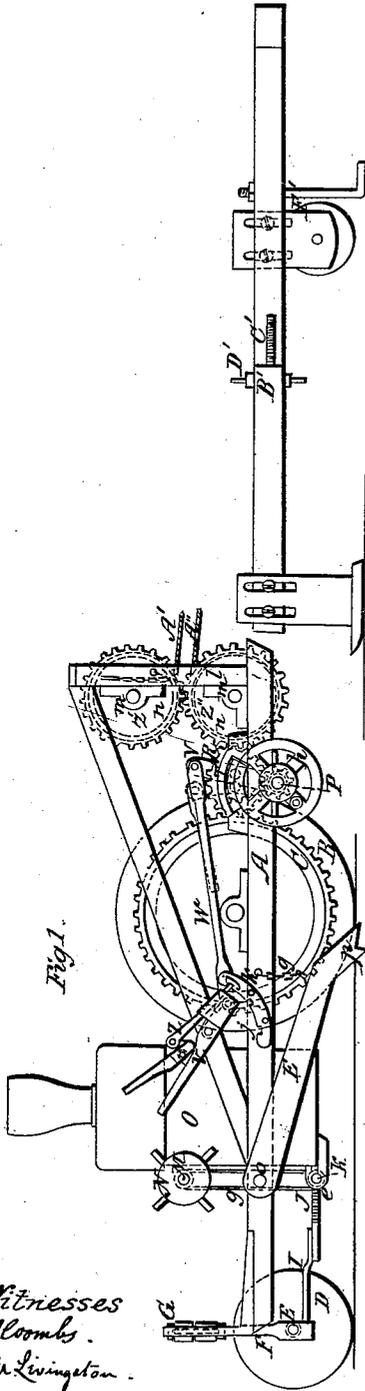


J. W. FAWKES.

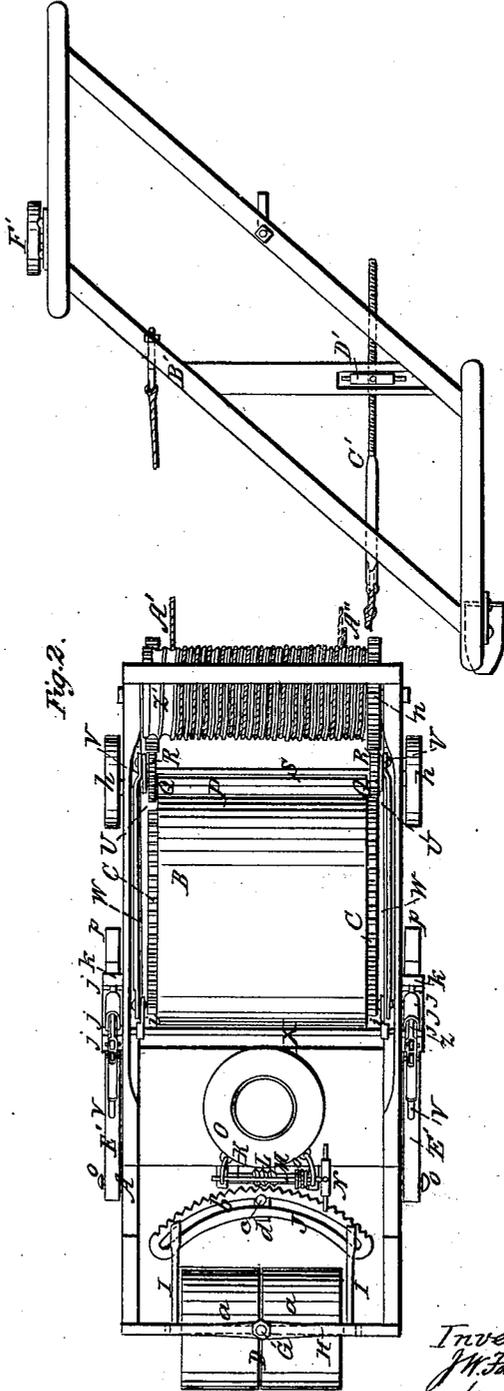
Steam-Plow.

No. { 2,878, }
 { 33,882. }

Patented Dec 10, 1861.



Witnesses
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UNITED STATES PATENT OFFICE.

J. W. FAWKES, OF DECATUR, ILLINOIS.

IMPROVEMENT IN STEAM-PLOWS.

Specification forming part of Letters Patent No. 33,882, dated December 10, 1861.

To all whom it may concern:

Be it known that I, J. W. FAWKES, of Decatur, in the county of Macon and State of Illinois, have invented a new and Improved Steam-Plow; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side view of my invention, and Fig. 2 a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in combining a stationary and a traction engine with plows or excavators, substantially as hereinafter fully shown and described, whereby the plows are drawn along through the soil when the engine is stationary, the power being applied direct to the plows, and the latter drawn up to the machine or engine, the latter being then converted into a traction-engine, and propelled along while the plows are stationary, in order that the plows may be again drawn forward by the engine after the same is converted into a stationary one.

The invention is more especially designed for performing heavy work, such as ditching, plowing with gang-plows, &c.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a horizontal rectangular frame, the back part of which is supported by a drum, B, which extends the whole width of the frame, and has its axis at right angles with it at all times. This drum B may be of any suitable diameter, and to each side of it there is attached a concentric toothed rim, C. These rims are somewhat smaller in diameter than the drum, as shown clearly in Fig. 1.

The front part of the frame A is supported by a swivel-roller, D, which is formed of two equal parts, *a a*, placed loosely on a common shaft, E, the ends of which have their bearings in a yoke or bow frame, F, the center of the upper part of which is connected by a king-bolt, G, to a curved cross-bar, H, which connects the front ends of the side pieces of the frame A.

The lower ends of the yoke or bow frame F have each a rod, I, attached at right angles. These rods I extend back a requisite distance, and are attached to the ends of a segment-rack, J, which has a slot, *b*, in it nearly its

whole length. The segment-rack J is a portion of a circle of which the king-bolt G is the center.

In the front part of the frame A, just back of the segment-rack J, there is placed a horizontal shaft, K, which has a screw, L, on it. This screw L gears into the segment-rack J, and the latter is guided and retained in proper position by means of a friction-roller, *e*, which is attached to a bar, *d*, and is fitted in the slot *b* of the rack J. (See Fig. 2.) The shaft K has a pulley, *e*, on it at one end, around which and a pulley, *f*, on a shaft, M, a belt, *g*, passes. The shaft M is provided with a hand-wheel, N, at one end.

O is a steam-boiler of the upright form, placed at the front part of the frame A. This boiler is designed to generate steam for engines, the pistons and connecting-rods of which communicate motion to a shaft, P, through the medium of crank-wheels *h*, the shaft P being at the back part of the frame A. This shaft P has toothed wheels Q Q upon it, one near each end, which wheels gear into wheels R R on a shaft, S, the journals of which are fitted in sliding or movable bearings T T. The bearings T T are of segment form, and are fitted in segment-guides U U at each side of the frame A, said guides U being portions of circles of which the shaft P is the center. (See Fig. 1.)

Each bearing T has a lever, V, attached to it, and the lower ends of said levers rest on the shaft P. To the upper end of each lever V there is connected a rod, W. These rods W extend back to the front part of the drum B, and are attached to the ends of arms *i i* on a shaft, X, which has a lever, Y, on one or both ends of it, said levers being provided with a pawl, Z, which may be made to catch into any one of three notches, *j*, in segment-bars *k* at the sides of the frame A.

At the back end of the frame A there are two uprights, *l l*, one at each side, and to these uprights the bearings *m* of the shafts of rollers Z' Z'' are attached. The rollers Z' Z'' form a windlass, and are placed one over the other in the same axial plane, and they are connected at one end by gears *n n*. The lower roller, Z'', has a gear at both ends, said gears being in line with the wheels R R on the shaft S, the wheels R being also in line with the toothed rims C of the drum B.

The rollers Z' Z'' are grooved spirally, and have ropes or chains A' A'' attached to them

at one end, the rope or chain of one roller being wound around it in a direction opposite to that of the other, and the two ropes or chains attached to their respective rollers at opposite ends. The ropes or chains work or fit in the grooves of the rollers $Z' Z''$, the rope or chain A' of the upper roller, Z' , being attached directly to a horizontal rhomboidal frame, B' , and the rope or chain A'' of the lower drum, Z'' , being attached to a screw-rod, C' , which is fitted horizontally in the frame B' , and rendered capable of being adjusted longitudinally therein by means of a nut, D' , as shown clearly in Fig. 2.

To each side of the frame A of the machine there is attached by a bolt, o , a spud, E' . These spuds may be of any proper or desired length, and their back ends are forked, as shown at p , the bolts o passing through their front ends. The spuds, when not in use, are held up free from the ground by means of chains q , the links of which catch on hooks at the sides of the frame A .

The horizontal rhomboidal frame B' has plows attached to it. These plows may be arranged in gang form to plow for the cultivation of crops; or they may be arranged in a different way and so constructed as to form ditches and trenches. Different forms of plows may be attached to the frame B' as the nature of the work requires, and said frame may be supported by one or more adjustable wheels, F' .

The operation of the machine is as follows: When the device is to be transported from place to place it is simply a traction-engine, the plow-frame B' being detached from the frame A or being elevated on its rollers F' , so that its plows may be above the surface of the ground. The operator, by adjusting the lever or levers Y , throws the wheels $R R$ of shaft S out of gear with both the wheels of the lower roller, Z , and into gear with the toothed rims C of the drum B , the levers V being retained in the lowest notches, j , of the segments k . The drum B has sufficient traction to propel the machine. The spuds E' are also elevated above the surface of the ground when the machine is used simply as a traction-engine.

The machine is guided by turning the front roller, D , either to the right or left through the medium of the shaft M , belt g , shaft K , screw L , and segment-rack J . This arrangement of parts forms a very efficient means for turning or guiding the machine, enabling the work to be done with great facility and ease.

When the machine is to perform its legitimate work—to wit, plowing or ditching—the engine is used as a stationary one, the spuds E' being let down at both sides of the machine, so that their forked ends p will penetrate the earth, as shown in Fig. 1. The frame B' , with its plows attached, is some distance back of the machine, said distance being equal to the length of the ropes or chains $A' A''$. The operator or attendant actuates the lever or levers Y , throws the wheels $R R$ in gear with the wheels of the lower roller, Z'' and the two

rollers $Z' Z''$ will therefore be simultaneously rotated and the ropes or chains $A' A''$ wound upon them, the frame B' with its plows being drawn up to the machine while the latter is held stationary by the spuds E' . By this arrangement it will be seen that the whole of the power is applied directly to the plows and that no power is lost by propelling the machine along with the plows. The machine also, it will be seen, may be made quite light, as weight is not required to obtain a requisite degree of traction, as in the ordinary steam plowing-machine.

After the frame B' has been drawn up to the machine the spuds E' are elevated and the wheels $R R$ thrown into gear with the toothed rims $C C$ of the drum B . The machine is thereby again converted into a traction-engine and moves along, leaving the frame B' with its plows remaining in their tracks or furrows. When the machine has moved along a distance equal to the length of the ropes or chains $A' A''$ it is stopped by throwing the wheels $R R$ out of gear with the toothed rims $C C$, but not in gear with the wheels of the lower roller, Z'' . The spuds E' are then lowered and made to catch into the ground, and the wheels $R R$ thrown into gear with the wheels of the lower roller, Z'' . Thus the frame will be again drawn forward to the machine.

The invention as a whole is extremely simple and efficient, and answers admirably for heavy work, such as ditching and deep plowing. The machine may be managed by persons of ordinary ability, there being no complicated parts to operate by hand and but little manipulation required.

By adjusting the bar C' longitudinally in the frame B' the latter may be adjusted more or less angularly or obliquely with the machine, as circumstances may require, all that is necessary in order to adjust the bar C' being the turning of the nut D' .

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, for the purpose of plowing, ditching, &c., by steam, of a stationary and traction engine, windlass attachment, and plow-frame, substantially as set forth.

2. The peculiar arrangement of the geared drum B , shifting wheels $R R$, and geared rollers $Z' Z''$, which form a windlass, substantially as herein shown and described, for the purpose of readily changing the engine from a traction to a stationary one, and vice versa, when said windlass and engine are used in combination with plows, for the purpose specified.

3. The adjustable draft-bar C' of the frame B' , arranged, substantially as shown, to admit of the adjusting of the frame B' , for the purpose described.

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Witnesses:

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