

Steam Flow.

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IMPROVEMENT IN STEAM-PLOWS.

Specification forming part of Letters Patent No. 27,242, dated February 21, 1860.

To all whom it may concern:

Be it known that I, GEO. M. RAMSAY, of the city, county, and State of New York, have invented a new, useful, and Improved Steam-Plow, which is fully and clearly set forth in the following specification, including the accompanying drawings and letters of reference marked thereon, making a part of this specification.

Like letters refer to like parts in each drawing.

Figure 1 is a side view. Fig. 2 is a plan view. Figs. 3 and 4 are sections of parts which will be explained as we proceed with the specification.

A is the frame, to which and upon which all the machinery is attached and held in position.

B B are traveling wheels.

C is a traveling caster-wheel in front with gear and pinion wheel D D and pilot-wheel E to be used in turning the machine.

F is a swing-frame swung upon each end of the axle C, upon which revolves the traveling wheels B.

H is the boiler.

The swing-frame F extends forward to the front end of A, and also extends back sufficient distance to receive the fixed shaft I, which forms part of said frame, and upon which the two plow-cylinders J J with spiral cutting-blades are held in proper position and made to revolve by the endless chains K working upon the chain-wheels L on the outer ends of the two cylinders J, and also upon the outer sides of the traveling wheels B. The chain-wheels L are of different diameters to obtain different speed of the plowing-cylinders J.

The endless chains K may have a number of links attached with bolts and screws which can be removed and reinserted, so as to adjust the length of chain to the diameters as required.

M is a brace to support the middle of the shaft I, and also serves as a division between the cylinders J. The cylinders J revolve upon the shaft I like loose pulleys, and have their bearings *n* within, as shown on the drawings.

N are tubular reservoirs for oil or tallow to lubricate the inclosed bearings of J, and these oil-tubes are protected from dust by a plug in their outer orifice.

I make my spiral blades cut the full width

of the traveling wheels B, so the wheels B, when on a return furrow, will still travel upon the unplowed ground. The spiral plowing-blades upon the revolving cylinders J are bolted and screwed or riveted fast to flanges of the same spiral pitch, which flanges are also bolted or riveted to or may be cast solid upon the cylinders J. These plowing-blades may be made of boiler-plate or saw-steel plate. The cylinders J are made to reverse by changing either one to the position of the other, and thus the blades are resharpened. The spiral-blade plow-cylinders J are rendered self-adjusting by the spiral spring O and suitable screw-standards, Z, and keeper P, or equivalent devices, so as to increase or diminish the pressure of the plow-cylinders J, as required, upon soft and hard soils. The spring O, screw-support Z, and keeper P, operating upon the cylinders J by means of the swing-frame F, enable the cylinders J to rise out of the ground when any impenetrable substance is met with, and thus avoid breaking the machine, and again sinks into the ground the required depth when the obstruction has been passed.

Q are holes in the frames F and A, by which the cylinders J may be firmly affixed with bolts to any desired depth, if required.

S are cutters to prevent the machine from slipping sidewise when required, and also to support the endless chains *k* and to clear away any obstructions that may present. Anti-friction rollers may be placed upon S to carry or support the endless chains *k* with greater ease and less friction.

R are the common driving-shafts of the whole machine.

T are four wheels working upon R. Each wheel has a groove on each side wherein the fulcrums of the cam-levers *n* work.

V are levers connecting the cam-lever *n* with the piston-rod of the steam-cylinder *w*.

Y, Figs. 3 and 4, are frames to support the steam-cylinder *w*, and are attached to and swung upon the axle G in such a manner as to be easily brought into line with the driving-shafts R.

On the driving-shafts R are two pin-wheels, *t*, working into corresponding holes in the peripheries of the traveling wheels B, and through these pin-wheels *t* power and motion are transmitted to B, and from B power and

motion are transmitted through the endless chains *k* to the plow-cylinders *J*. When it is desired to use the steam-power as a stationary motor it is only necessary to withdraw the pins *t* and locomotion ceases. The ends of the shafts *R* are made sufficiently long to receive a driving-pulley for stationary purposes.

V are scrapers to keep the wheels *B* clean, for the better working of the pin-wheels *t*.

a are two levers working upon swing-joints attached to the cross-bar of frame *F*.

b are two clamps bolted fast to *a*, and span the grooved wheels *T* and enter grooves in the chucks *w*, while the chucks *w* fit into corresponding niches in the hubs of wheels *T*. In each of the shafts *R* there is a groove lengthwise, in which the tongue of the chucks *w* glides, which prevents the chucks from turning upon the shafts *R*. When the hubs of *T* are not clutched they work loose upon the shafts *R*. Thus by the combined action of the wheels *T*, levers *u* and *v*, and levers *a* with clamps *b*, together with the chucks *w*, in connection with hubs of *T*, a reverse motion or locomotion is obtained without changing the action of the steam.

d are the valve-rods.

e are the steam-supply pipes to the cylinders *w*.

f is a common supply-cock, which admits the same quantity of steam to each cylinder.

g are the check-cocks, whereby the steam to either cylinder may be diminished or increased, and thus either side of the machine may be driven faster or slower, by which any curve in the field, either to the right or left, may be turned at pleasure.

h is the water-tank.

r is the driver's seat, in a position to control the check-levers *a*, steam check-cocks *g*, and pilot-wheel *E*.

The driving-shafts *R* can be clutched together at their middle ends, so as to make both sides of the machine work in concert, if desired.

The whole plowing and locomotive parts of the machine are constructed in two symmetrical halves, or, in other words, in a right half and a left half. It is this right-and-left principle of construction which enables me to drive each plow-cylinder with a continuous driving-power and means from each outer end in the turning of curves, and equalizes the power and speed in accordance to the distance traveled both in the long and short line of the curve.

By bolting or riveting the spiral arranged blades upon the cylinders *J*, the blades are easily removed and replaced with new blades, when the old are worn out or broken. The spiral blades should twist around the cylinder *J*, so that their outer and cutting edges will travel when revolving the same, or near the same, distance transversely as forward in each revolution, so as to better invert the soil, clean the blades, and allow a proper speed in locomotion.

By use of the driving endless chains *k*, when applied direct to the plow-cylinders *J* from the traveling wheels *B*, the proper forward motion is given to the cylinders *J*.

Having thus fully and clearly described the construction and operation of my invention, what I claim is—

The arrangement of the plow-cylinders *J J*, driving-wheels, guide-wheel, boiler, and engines, the whole being constructed, operated, and operating as herein shown and described.

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Witnesses:

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