

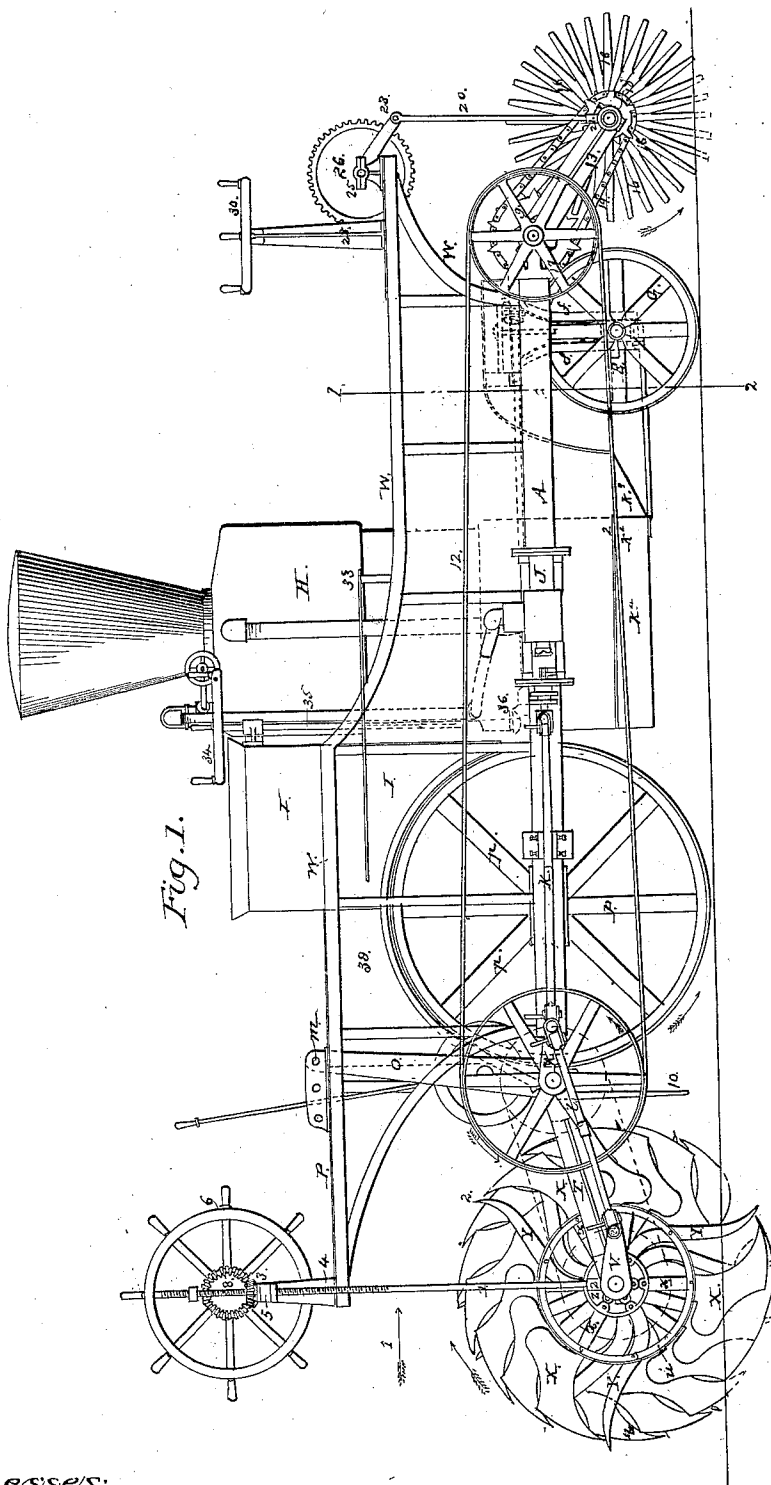
C. W. SALADEE.

3 Sheets—Sheet 1.

Steam Plow.

No. { 1,648, {  
      { 32,652. }

Patented June 25, 1861.



Witnesses:

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Inventor:

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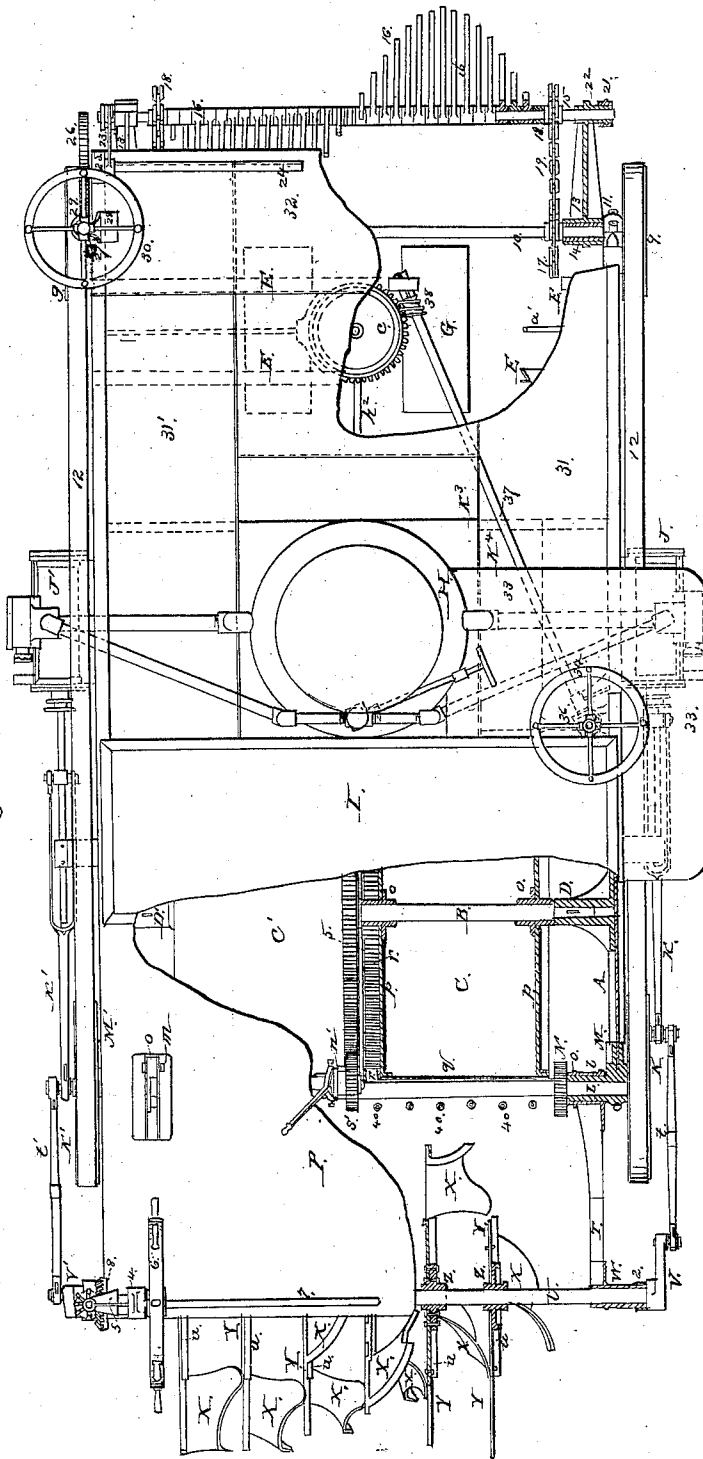
3 Sheets—Sheet 2.

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Patented June 25, 1861.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, OF PINE ISLAND, TEXAS.

## IMPROVEMENT IN STEAM-PLOWS.

Specification forming part of Letters Patent No. 32,652, dated June 25, 1861.

*To all whom it may concern:*

Be it known that I, CYRUS W. SALADEE, of the county of Jefferson and State of Texas, have invented a new and useful Improvement in Steam-Plows; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the employment of rotary plows of a peculiar construction and arrangement, and of the different modes of raising, lowering, and driving them; of the arrangement of the seeding apparatus; in the peculiar construction and arrangement of the driving-drums; of the position and arrangement of the tank, boiler, and wood-boxes; in the employment of rotary harrows of a peculiar construction and arrangement, and of the mode of raising, lowering, and driving them; of the construction and arrangement of the steering apparatus, and of the mode of constructing and arranging the ash-pan.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of my improvement. Fig. 2 is a plan with some of the parts removed and some in section. Fig. 3 is an end view, looking in the direction of the arrow, Fig. 1, with some of the parts removed and some in section. Fig. 4 is a section through the line 1 2, looking in the direction of the arrow, Fig. 1. Fig. 5 is a side elevation; Fig. 6, an end view, looking in the direction of the arrow, Fig. 5; and Fig. 7, a plan, with some of the parts in section, of an apparatus for raising and lowering the plows.

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

A and A' are two wrought-iron beams, forming the main frame of the machine.

B is a shaft, secured to the steps D D', bolted to the beams A and A', forming the front brace of the machine, and carrying the drums C and C', the construction of which will be described hereinafter.

E E are two beams forming the back brace of the machine, and secured to the beams A

and A'. Upon the under side of these beams a circular plate, *a*, is fastened, having a projecting ring, *b*, upon its under side. Bearing against this ring *b* is a plate, *c*, with a worm cut upon its face, and kept in its place by the ring *e*, attached to it and surrounding the ring *b*, also by the pin *d*, passing through the two plates. Secured to the under side of the plate are four standards, *f f f f*, (between which is the box *g*,) held rigidly together by the plate *h*.

F is an axle vibrating in the box *g* and carrying the wheels G G.

*i* is a spring bearing upon the top of the box *g*, and confined by the plate *j*, secured to the standards *f f f f*.

*a* and *a'* are rods secured to the sides of the plate *a* and fastened to the underside of beams A and A'.

H is the boiler, placed immediately back of the drums C and C' and secured to the beams A and A'.

I is the water-tank for supplying the boiler, extending from the boiler H to within line with the center of the shaft B and across the machine.

J and J' are the two steam-cylinders secured to the beams A and A', and connected, at right angles the one with the other, to the crank-wheels K and K', attached to the shaft L.

L is the driving-shaft working in the bearings M and M', and carrying the driving-pinions N and N'.

O and O' are bars vibrating upon the projections *l* and *l* of the bearings M and M', and fastened to the top of the platform P by the pins *m* and *m*.

Q is a shaft working in bosses cast upon the bars O and O', receiving motion from the pinions N and N' gearing into the trundles R and R', fastened upon it.

S and S' are two pinions fitting loosely upon the shaft Q, and receiving its motion through the clutches *n* and *n'*.

C and C' are two drums, each having two centers, *o o*, working freely upon the shaft B, from which the arms *p p* radiate to the rim *q*. The space between the arms is filled in so as to prevent the entrance of any dirt or stones. Near the periphery of the inner side of these wheels start the trundles *r r*, supported at their outer end by the rings *s s* and geared into by the pinions S and S'.

T and T' are the plow radius-bars, vibrating upon the projections *l l* of the bearings M and M' and between them and the bars O and O'.

U is the plow-shaft working in the outer end of the radius-bars T and T', and receiving motion from the crank-wheels K and K' through the medium of the connecting-rods *t* and *t'* and the cranks V and V'.

W W is the side framing of the machine, a platform, P, being thrown across its top in front of the water-tank I.

XX are the plows, arranged in sets upon the shaft, three or any other number that may be practical constituting such sets. These plows are secured to radial arms *x x*, and the latter secured to the angle-iron ring-brace *u* and the center Z of the shaft. The heel of these plows must be thrown back from the line or circle described by their points in proportion to the distance the machine advances while the plows make one revolution, for if, on the contrary, the heel was not thus thrown back the forward motion of the machine would cause the same to rest against the solid ground while passing through it, so as to check the machine or break some of the parts connected with the plows.

Y Y are the colters, one in front of each plow, bolted to the ring-brace *u* and the center Z. The point *z* is made to extend out beyond the line described by the point of the plows. This must be done in order to make these colters cut the ground at the point where the point of the plows enter. If the machine were standing still while these plows and colters revolved, then there would be no need of so extending the points of the colters as described; but taking into consideration the fact that as the machine advances while the plows are revolving, the points of the plows would strike the ground in advance of the point struck by the colter. But let the point of the colter extend out beyond the line described by the point of the plows the required distance, and they will be made to enter the ground just when the colter did. By this arrangement, also, either one of the plows or colters may be taken out and replaced without interfering with the other.

The plows in each succeeding set are made to recede from their predecessor, as shown in Fig. 1.

1 1 are the plow raising and lowering rods, one end of which is secured to the sleeves 2 2, working on the extensions W W of the radius-bars T and T', and the other having a thread cut upon it and screwing into the pinions 3 3.

4 4 are two stands secured to the platform P. The bearing of these stands is extended outwardly, upon which the bridles 5 5 oscillate. The lower end of these bridles grasps the pinions 3 3, the latter being allowed to work freely, and the upper end being bored straight, acts as a guide to the rods 1 1.

6 is a hand-wheel communicating motion to the shaft 7 working in the bearing of the stands 4 4, and having the bevel-gear 8 8 attached to each end and giving motion to the pinions 3 3.

9 9 are belt-wheels secured to the shaft 10, working in the bearings 11 and 11', and receiving motion from the crank-wheels K and K' through the belts 12 12.

13 and 13' are radius-bars vibrating upon the extension 14 14 of the bearings 11 11'.

15 is the harrow-shaft, receiving motion from the shaft 10 through the medium of the chain-wheels 17 17 18 18 and chain 19, and working in the outer end of the radius-bars 13 and 13'.

16 16 are the harrows, forming a revolution, as shown in Fig. 1.

20 20 are the harrow raising and lowering rods, one end of which is secured to the sleeves 21 and 21, working on the extension 22 22 of the radius-bars 13 and 13', and the other to the levers 23 23, fixed to the shaft 24.

24 is a shaft carrying the levers 23 23, working in the bearings 25 25, and having the worm-wheel 26 attached to one end.

27 is a vertical shaft working in the bearings of the standard 28, having the worm 29 secured to its lower end, and working in the worm-wheel 26, and the hand-wheel 30, secured to its upper end.

31 31' are wood-boxes placed upon each side of the machine, their width being governed by the boiler and outer framing, and extending from the tank to the back end of the machine, the inside of the framing from the tank being lined.

32 is a platform extending across the machine, for the harrow-operator to stand upon.

33 is a platform upon which the engineer and steersman stand.

34 is the hand-wheel for operating the steering apparatus, and secured to the shaft 35.

35 is a shaft working in bearings top and bottom, and having a miter-wheel, 36, upon its lower end, gearing into a corresponding wheel upon the shaft 37.

37 is a shaft working in bearings upon each end, and giving motion to the worm 38, gearing into the worm-plate *c*.

*h*<sup>2</sup> is a rod for keeping the steering-wheel's pedestal vertical, and at the same time allow it to revolve upon its center, one end being secured to the ash-pan immediately under the boiler, and the other end, being provided with an eye, is secured to the plate *h* by a pin.

*h*<sup>2</sup> is the ash-pan, situated immediately under the boiler, one end, *h*<sup>3</sup>, of which projects back, and from which starts the floor between the wood-boxes. The other, *h*<sup>4</sup>, extending out on one side, is provided with a cover to prevent the hot coals from dropping out, and at the same time allow the removal of the ashes.

39 is the seed-box, made the same width as the drums C and C', and extending from the tank I to within line with the inside edge of the shaft Q.

40 40 are the seed-drills.

In driving the plows, instead of using the cranks, chain-gearing may be employed, as shown in the dotted red lines.

In raising and lowering the plows the arrangement shown in Figs. 5, 6, and 7 may be

substituted for that shown in Fig. 1. The rod in this arrangement has teeth cut upon its inner edge, into which the teeth of the pinion 42 gear, being kept in gear and allowed to assume any angularity by the bridle 43, which vibrates upon the shaft 7.

The operation of the machine is as follows: The plows and harrows being raised up, steam is given to the pistons, and the shaft L caused to revolve through the medium of the piston-rod, connecting-rod, and crank-wheel, transmitting motion through the pinions N and N' and trundle-wheels R and R' to the shaft Q, which in its turn transmits its motion through the clutches *n* and *n'*, pinions S and S', and the trundles *r r* upon the drums C and C' to the same. The drums revolve in the direction of the arrow, as likewise the other parts to their corresponding arrows. Motion is also given to the plow-shaft U through the connecting-rods and cranks. The harrows are also caused to revolve by the power transmitted through the belts and chain-gearing. The plows are now lowered to the desired depth by the operator at the hand-wheel 6, and when the seed-drills arrive at the plowed-up portion of the ground they are allowed to distribute their seed. The harrows also are lowered to the desired depth when they reach the plowed ground.

In turning the machine round the plows and harrows are elevated, the distribution of seed stopped. If it is desired to turn to the left, the clutch *n* is thrown out of gear, allowing the drum C, which now acts as a pivot, to turn freely upon its shaft, and on the hand-wheel 34 being turned to the left the machine commences to turn.

With my arrangement of plows, in case any

one of them may be broken, or from any defect it may be necessary to remove any one of them, it can be easily accomplished by removing the bolts in the brace and the center and supplying the place of the broken or injured one by another. The same may be done with the colter.

Now, what I claim as novel, and desire to secure by Letters Patent, is—

1. The combination of the several parts shown and described, for the purpose of combining in one machine the facilities of plowing, sowing the seed, rolling, and harrowing at one operation, as well as to perform either of those objects separate and apart from the others.

2. The peculiar construction and arrangement of the plows X and colters Y, Fig. 1, in combination with the angle-iron ring-brace U, in the manner and for the purpose shown and described.

3. Extending the points Z of the colters Y, Fig. 1, out beyond the line or circle described by the points of the plows, in the manner and for the important purpose set forth.

4. The radius-bars O O, Fig. 1, (but more particularly shown in Fig. 3,) shaft Q Q, shifting pinions S S, in combination with the crank-shaft L and revolving drums C C, for the purpose of regulating the advance of the machine in proportion to the cut made upon the ground at each revolution of the plows, and for the additional purpose of throwing out of gear either one or both of the drums C C to facilitate the turning of the machine, as shown and described.

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Witnesses:

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