W. S. GRAHAM.

REVERSIBLE PLOW.

APPLICATION FILED MAR. 15, 1911.

1,018,821.

Patented Feb. 27, 1912.

2 SHEETS—SHEET 1.

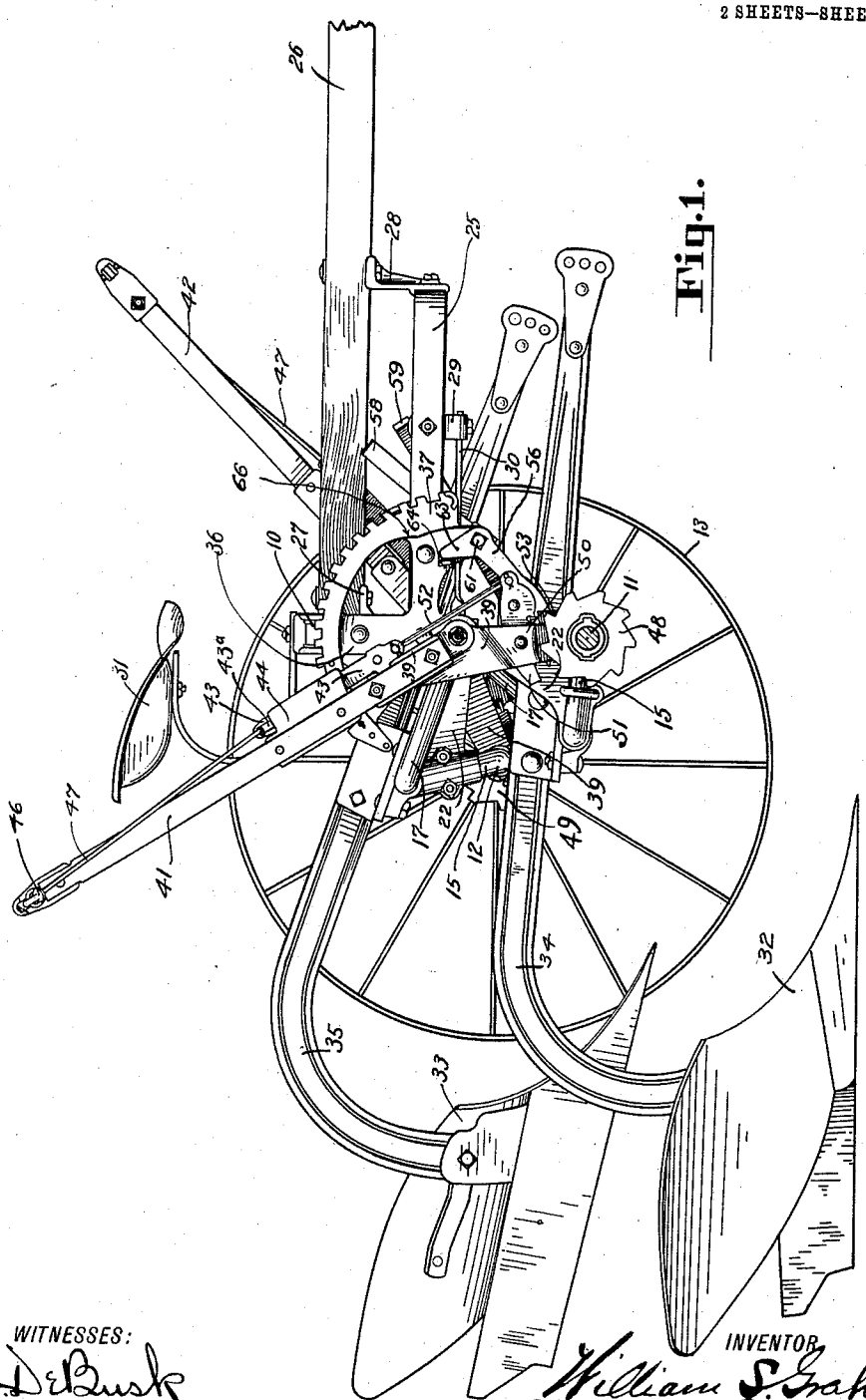

Fig. 1.

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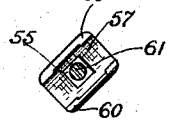
2 SHEETS—SHEET 2.

Fig. 6.



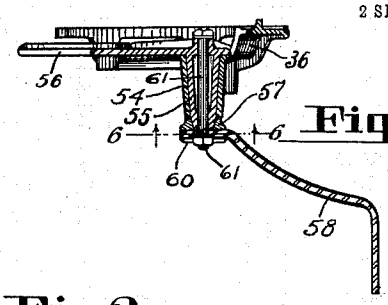


Fig. 5.

Fig. 2.

Fig. 4.

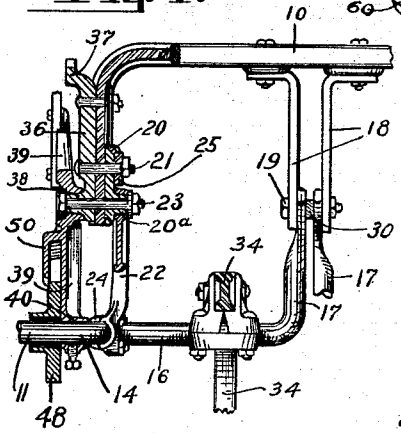
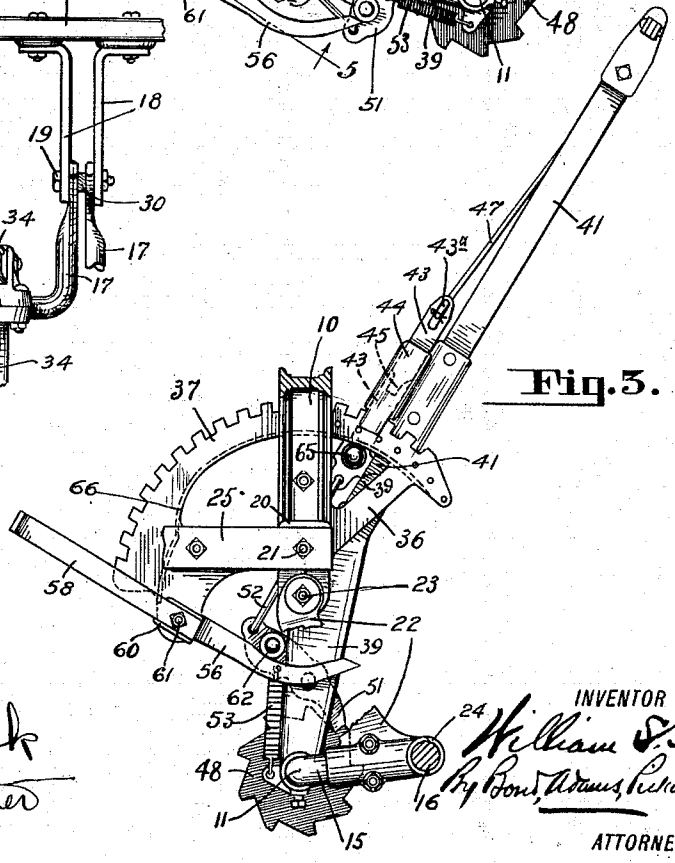


Fig. 3.



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UNITED STATES PATENT OFFICE.

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REVERSIBLE PLOW.

1,018,821. Specification of Letters Patent. Patented Feb. 27, 1912.

Application filed March 15, 1911. Serial No. 614,600.

To all whom it may concern:

Be it known that I, WILLIAM S. GRAHAM, a citizen of the United States, residing at Canton, in the county of Fulton, State of Illinois, have invented certain new and useful Improvements in Reversible Plows, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to reversible plows and it has for its object to provide new and improved means for raising the plow-shares out of the ground. The means by which I have accomplished this object are illustrated in the drawings and hereinafter specifically described. That which I believe to be new is set forth in the claims.

In the drawings,—Figure 1 is a side view of my improved plow, with the near one of the supporting wheels removed, one plow-share being shown in its raised position and the other in its lowered position. Fig. 2 is an enlarged detail, showing the near one of the levers of Fig. 1 and its connected parts as seen from the inside when moved to its forward position to raise the plow-share. Fig. 3 is an enlarged detail of the same parts when the plow share is in its lowered position, as also seen from the inside with the foot lever depressed just ready for a forward stroke of the lever to raise the plow-share. Fig. 4 is a front view, partly in section, of the near side of the plow as shown in Fig. 1, with certain parts omitted. Fig. 5 is a section taken on line 5—5 of Fig. 2, with the lever and certain of the parts of the frame omitted. Fig. 6 is an enlarged detail, being taken on line 6—6 of Fig. 5.

Referring to the several figures of the drawings, in which corresponding parts are indicated by the same reference characters,—10 indicates the arch of the framework of the plow, mounted in which in the manner hereinafter described are two axle-members 11—12, upon which are journaled wheels 13. Each of the axle-members 11—12 is in the construction shown formed of a steel rod bent to have four distinct parts in effect,—the axle proper 14, a part 15 at right angles thereto, a second horizontal part 16 parallel with the axle 14, and a fourth part 17 at right angles to the part 16 and at an angle of approximately sixty degrees to the part 15.

18 indicates two arms suitably secured to and depending from the central portion of the arch 10, the lower ends of which are pivotally connected by means of a bolt 19 to the ends of the parts 17 of the axle-members 11—12.

20 indicates two plates one of which is secured by means of a bolt 21 to the lower end of each of the arms of the arch 10. 20ª indicates a boss on the inside face of each of said plates 20, upon each of which is pivotally mounted an arm 22 held in position thereon by a nut and washer on the end of the bolt 23. As best shown in Fig. 4, the lower end of each of the arms 22 is made in the form of a semi-cylinder to fit the part 15 of the adjacent axle-member, a cap 24 being secured to the lower end of the arm 22 to hold the part 15 in position. The bolts 19 and 23 are in alinement with each other, the result being that the axle-members 11—12 and the wheels 13 are permitted to swing upon the arms 22 and the parts 17.

25 indicates a U-shaped frame bar extending across the machine in front of the arch 10, the rear ends being secured to the arch 10 by the bolts 21.

26 indicates the tongue of the plow secured to the arch 10 by means of a bracket 27, and secured to the frame bar 25 by means of a bracket 28.

29 indicates a cross bar extending across the machine from one to the other of the arms of the U-shaped frame-bar 25, to the central portion of which is secured a rearwardly-extending bar 30 the rear end of which is mounted on the bolt 19, thus effectively bracing the arms 18.

31 indicates a seat suitably mounted on the framework.

32—33 indicate plows carried by the beams 34—35 pivotally mounted on the parts 16 of the axle-members 11—12, respectively.

36 indicates a bracket fixedly secured to the framework at each side of the machine, provided with a circular rack 37 about the bolt 23.

38 indicates a boss formed on the bracket 36 through which the bolt 23 extends, upon which boss and held in position thereon by said bolt 23 is pivotally mounted at about its central point an arm 39 provided at its lower end with a sleeve 40 mounted upon and clamped to the part 14 of the axle-member at that side of the machine. Secured to the upper ends of the arms 39 are levers 41—42.

43 indicates slide-bars, one slidingly mounted in a sheath 44 carried by each of the levers 41—42.

45 indicates a slide-bolt carried by each of the bars 43 adapted to lock its lever against turning relative to the rack 37, as will be readily understood.

46 indicates a latch pivotally mounted on the upper end of each of the levers 41—42, and 47 indicates latch-rods, one pivotally connected at its upper end with each latch 46, the turned lower end of the latch-rod extending through a slot 43ª in each slide-bar 43.

48—49 indicate ratchet-wheels one of which is secured to each of the wheels 13 so as to rotate therewith.

50 indicates a flange forming a pocket on each of the arms 39, in which pocket is pivotally mounted a dog 51 the rear end of which is adapted to be brought into engagement with the ratchet-wheel 48—49 at that side of the machine.

52 indicates a link at each side of the machine connecting the lower end of the slide-bar 43 with the front end of the dog 51.

53 indicates a spring connecting each of the dogs 51 to a lug depending from the adjacent arm 39, said springs tending to hold said dogs out of engagement with the ratchet-wheels 48—49.

54 indicates a sleeve (see Fig. 5) formed on each of the brackets 36, in each of which sleeves is rotatably mounted a boss 55 formed on the end of an arm 56, said boss being squared at its outer end, as shown in Fig. 6, to receive a block 57.

58—59 indicate foot-levers, the rear ends of which lie between the flanges 60 formed on opposite sides of the blocks 57.

61 indicates a bolt passing through the arms 56 and the levers 58—59, holding the parts together so that each of the levers 58—59 and its arm 56 are held against movement relative to each other as they swing relative to the bracket 36.

62 indicates a stud, in the construction shown being in the form of a roller revolubly mounted on the dog 51 adapted to roll upon the upper surface of the arm 56.

63 indicates a lug extending upward from the arm 56 adapted to come in contact with a stop 64 on the bracket 36 limiting the downward swing of the arm 56.

With the plow in operation with the parts in the position shown in Fig. 1, when the end of the row is reached or when for any other reason it is desired to raise the plow 32, the foot-lever 58 is to be depressed, swinging the arm 56 at that side of the machine upward, raising the front end of the dog 51 through the medium of the roller 62 and bringing the rear end of the dog into engagement with the ratchet-wheel 48. This same movement of the dog 51 forces upward the slide-bar 43 through the medium of the link 52, disengaging the lever 41 from the rack 37. By reason of the engagement of the dog 51 with the ratchet-wheel 48, the wheel 13 at that side of the machine is held against rotation relative to the lever 41. The result is that the wheel is held against normal forward movement by its bearing on the ground and the continued pull on the frame moves the frame forward relative to the wheel, the wheel and the entire axle-member 11 and its connected parts swinging backward and upward relative to the frame on the pivot bolts 19 and 23, thus raising the plow 32 out of the ground, as is well understood. When the slide-bar 43 is raised through the medium of the foot-lever 58 as described, a roller 65 carried by the slide-bar is brought into contact with the circular under surface of the rack 37. As the wheel 13 moves upward and backward relative to the frame, the lever 41 is of course swinging forward relative to the frame. At just about the end of the forward stroke of the lever, when the plow 32 has been sufficiently raised, the roller 65 comes into contact with a cam portion 66 of the rack 37, which gradually forces the slide-bar 43 downward, bringing the slide-bolt 45 nearer and nearer to the teeth of the rack 37. At the same time, the dog 51 is being forced gradually out of engagement with the teeth of the ratchet-wheel 48, the roller 61 also approaching the end of the arm 56. Finally the slide-bolt 45 is forced into engagement with the rack 37 and at substantially the same time the dog 51 is forced out of engagement with the ratchet-wheel 48, at which time the roller 62 runs off of the curved portion of the arm 56. The pressure of the foot may be then removed from the foot-lever 58, whereupon the spring 53 draws the slide-bar 43 downward into the position shown in Fig. 2, with the roller 62 still engaging the beveled end of the arm 56. Whenever thereafter it is desired to lower either of the plows 32 or 33, the latch 46 of the corresponding lever 41 or 42 is pressed upward, releasing the slide-bolt 45 from the rack 37 whereupon the lever is free to be swung backward lowering the plow to the desired position, the arrangement being such that the slide-bolt 45 can be raised far enough to disengage it from the rack 37 without at the same time engaging the dog 51 with the ratchet-wheel 48.

By my invention I provide means for locking the carrying-wheels relative to the plow-frame of such a character that it is not likely to become distorted by any amount of use. The full pressure of the ratchet-wheel 48 or 49 when locked relative to the frame is brought to bear upon a heavy pivot bolt both ends of which are adequately supported so that there is no danger

whatever of the parts getting out of order. In my construction, there is no sidewise pressure whatever put upon the slide-bar 43 and therefore there is no danger that such bar will be sprung and rendered incapable of sliding freely in its bearings.

I do not wish to limit myself to the specific construction of foot-levers 58—59 and arms 56 shown in the drawings, except as hereinafter specifically claimed, as any suitable construction may be used which insures the result sought. In the construction shown, each lever 58—59 and its arm 56 constitute in effect a single part pivoted at an intermediate point. The claims, therefore, which call broadly for a foot-lever and an arm adapted to be swung therewith should be construed to cover a one-piece lever pivoted at an intermediate point as well as to cover the precise construction illustrated in the drawings.

What I claim as my invention and desire to secure by Letters Patent is,—

1. In a sulky plow, the combination with a frame, an axle adapted to be moved forward and backward relative to said frame, a carrying-wheel mounted on said axle, and a plow-share mounted in said frame and adapted to be raised by the backward movement of said carrying-wheel in said frame, of a dog pivotally mounted relative to said carrying-wheel, a foot-lever, an arm rigidly connected with said foot-lever, and a stud projecting from said dog in the path of the stroke of said arm, said dog being adapted to be moved by a stroke of said foot-lever into engagement with said wheel whereby the wheel is held against rotation relative to said axle.

2. In a sulky plow, the combination with a frame, an axle adapted to be moved forward and backward relative to said frame, a carrying-wheel mounted on said axle, a ratchet-wheel connected with said carrying-wheel, and a plow-share mounted in said frame and adapted to be raised by the backward movement of said carrying-wheel in said frame, of a dog pivotally mounted adjacent to said ratchet-wheel and adapted to be moved backward and forward relative to said frame with said carrying-wheel, a foot-lever pivotally mounted in said frame, an arm rigidly connected with said foot-lever, and a stud projecting from said dog and adapted to be engaged by said arm whereby a stroke of said lever causes said dog to move into engagement with said ratchet-wheel to hold said carrying-wheel against rotation relative to its axle, said arm being curved to conform substantially to the path of said stud as said carrying-wheel moves backward relative to said frame.

3. In a sulky plow, the combination with a frame, an arm pivotally mounted on said frame, a carrying-wheel journaled on said arm and adapted to be swung forward and backward relative to said frame, a ratchet-wheel connected with said carrying-wheel, and a plow-share mounted in said frame and adapted to be raised by the backward movement of said carrying-wheel in said frame, of a dog pivotally mounted on said arm adjacent to said ratchet-wheel, a rack mounted on said frame, a slide-bolt carried by said arm adapted to lock the arm to said rack, connections between said dog and said slide-bolt whereby the slide-bolt is moved out of engagement with said rack as said dog is moved into engagement with said ratchet-wheel, a foot-lever mounted on said frame, and an arm carried by said foot-lever in engagement with said dog, by a stroke of which lever said dog is brought into engagement with said ratchet-wheel and said slide-bolt is disengaged from said rack, said dog and the arm on said lever being adapted to maintain sliding engagement while said carrying-wheel moves backward relative to said frame.

4. In a sulky plow, the combination of a frame, a carrying-wheel mounted thereon, a plow-share mounted in said frame, an arm pivotally mounted relative to said frame, by the movement of which arm said plow-share is adapted to be raised, a dog pivotally mounted on said arm, a foot-lever pivotally mounted in said frame, and a second arm rigidly connected with said foot-lever and adapted to engage said dog, by a stroke of which lever said dog is swung into engagement with said wheel whereby said first-named arm is swung relative to said frame as said plow advances.

5. In a sulky plow, the combination of a frame, a carrying-wheel mounted thereon, a plow-share mounted in said frame, an arm pivotally mounted relative to said frame, by the movement of which arm said plow-share is adapted to be raised, a dog pivotally mounted on said arm, a foot-lever pivotally mounted in said frame, and a second arm rigidly connected with said foot-lever and adapted to engage said dog, by a stroke of which lever said dog is swung into engagement with said wheel whereby said first-named arm is swung relative to said frame as said plow advances, said second-named arm being curved to conform substantially to the path of the dog as said first-named arm is swung to raise said plow-share.

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