J. LANGLOIS.

GANG PLOW.

APPLICATION FILED APR. 30, 1912.

1,046,395.

Patented Dec. 3, 1912.

3 SHEETS—SHEET 1.

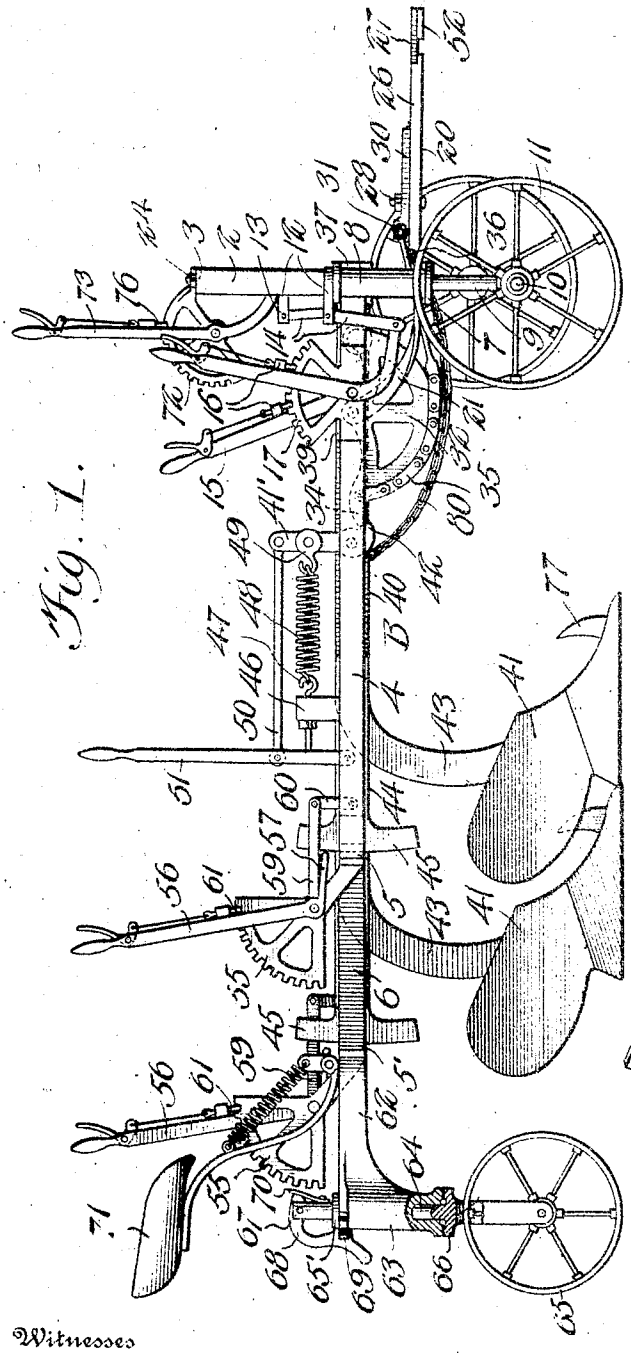

Fig. 1.

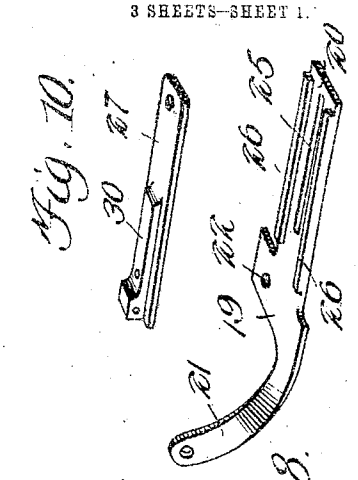

Fig. 10.

Fig. 8.

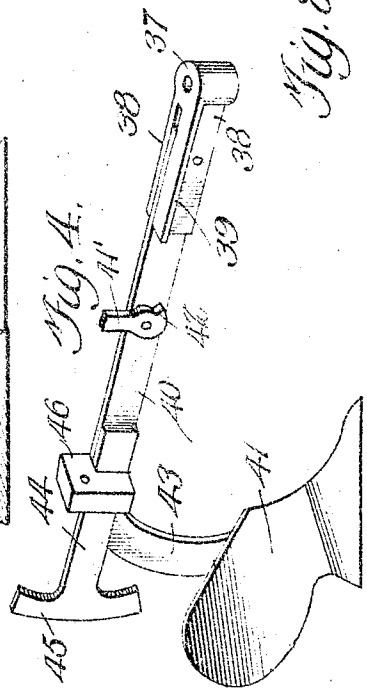

Fig. 4.

Witnesses

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3 SHEETS—SHEET 2.

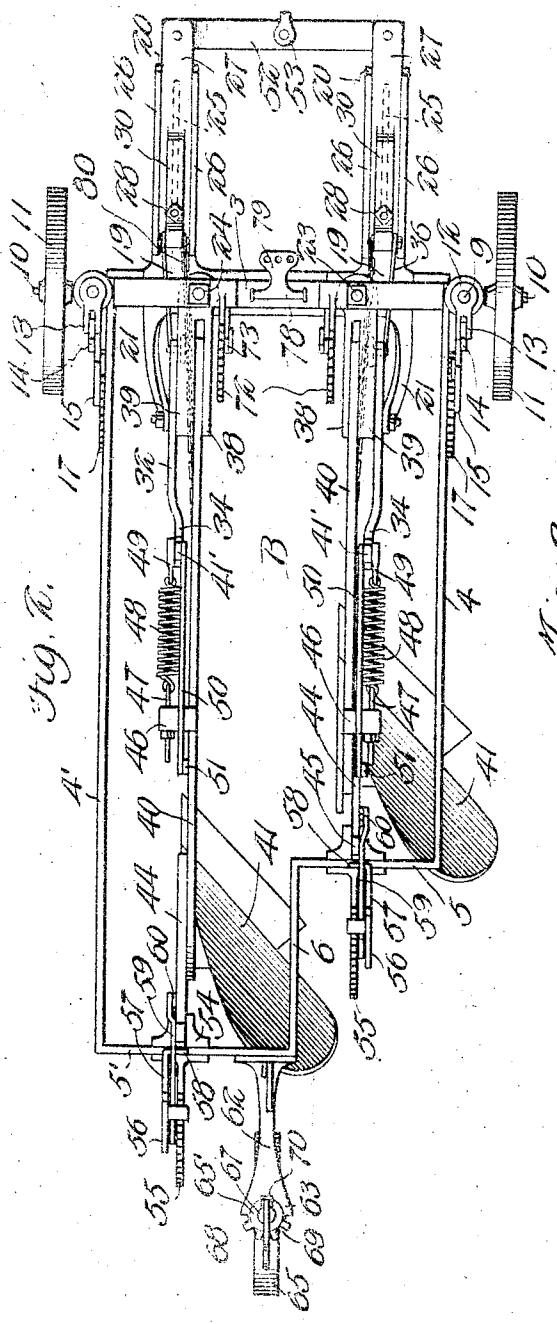

Fig. 2.

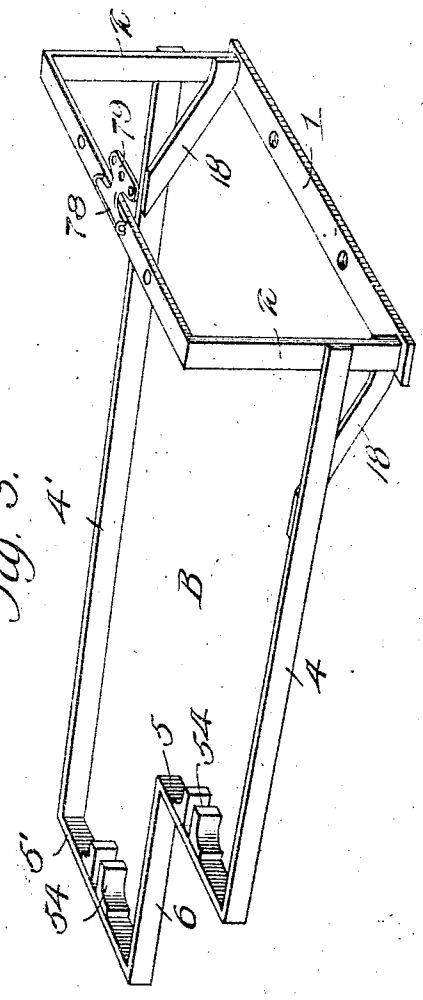

Fig. 3.

Witnesses

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3 SHEETS—SHEET 3.

Fig. 4.

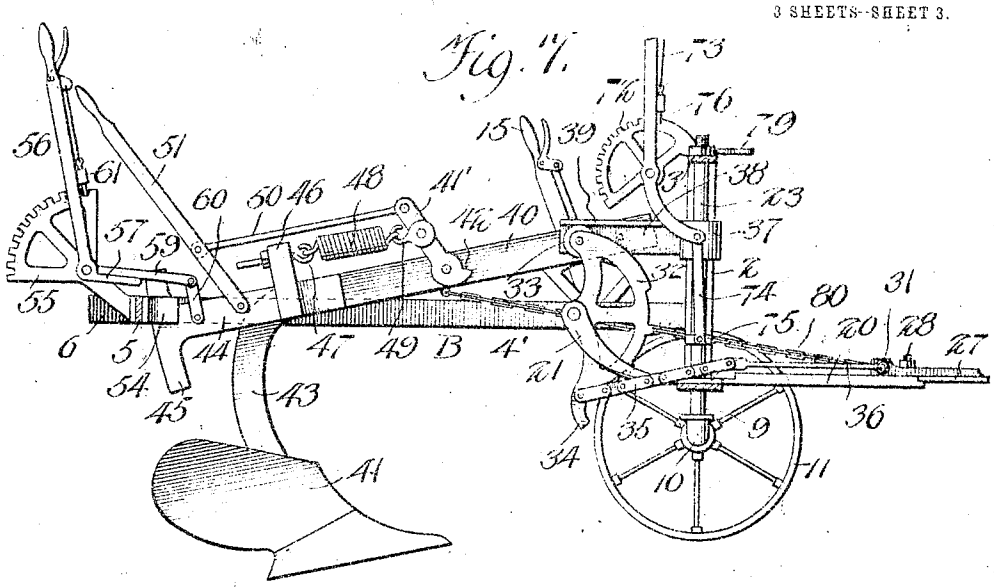

Fig. 5.

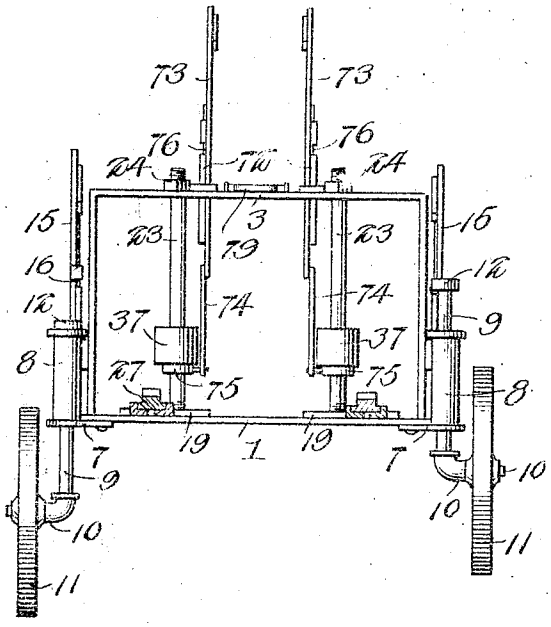

Fig. 6.

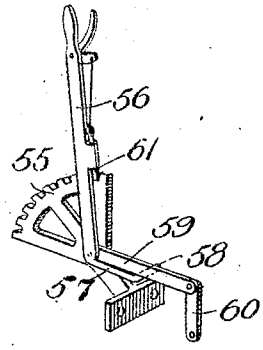

Fig. 9

Witnesses

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UNITED STATES PATENT OFFICE.

JEAN LANGLOIS, OF MOLINE, ILLINOIS, ASSIGNOR OF ONE-FOURTH TO MATTIE E. NEFF AND ONE-FOURTH TO MARIE MADELEINE, BOTH OF MOLINE, ILLINOIS.

GANG-PLOW.

1,046,395. Specification of Letters Patent. Patented Dec. 3, 1912.

Application filed April 30, 1912. Serial No. 694,089.

To all whom it may concern:

Be it known that I, JEAN LANGLOIS, a citizen of Canada, residing at Moline, in the county of Rock Island and State of Illinois, have invented new and useful Improvements in Gang-Plows, of which the following is a specification.

This invention relates to gang plows, and it has for its object to produce a riding gang plow of simple and improved construction and which shall be thoroughly useful and effective in operation.

A special object of the present invention is to provide a construction whereby, if a rock or similar obstruction shall be encountered by the plow, the nose of the plow will be tilted in an upward direction, causing the plow to ride over the obstruction without danger of breakage or injury, after which the parts may be replaced in position for operation.

Further objects of the invention are to provide a simple and improved construction whereby necessary and desirable adjustments of the parts of the device may be conveniently effected.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings.—Figure 1 is a side elevation of a two-unit gang plow constructed in accordance with the invention. Fig. 2 is a top plan view of the same. Fig. 3 is a perspective view showing the main frame including the axle and the front frame of the plow structure detached. Fig. 4 is a perspective view of one of the plow units detached. Fig. 5 is a front view. Fig. 6 is a perspective detail view of the adjusting means for the rear end of one of the plow units. Fig. 7 is a detail side elevation showing the position assumed by parts of the device when an obstruction is encountered. Fig. 8 is a perspective detail view of one of the sector supporting brackets. Fig. 9 is a perspective detail view of one of the sectors. Fig. 10 is a perspective detail view of one of the draft slides.

The axle 1 supports uprights 2, 2 which are connected at their upper ends by a cross bar 3, said uprights and cross bar constituting what will be known as the front frame. The main frame B is composed of side members 4, 4′ bolted upon and extending rearwardly from the uprights 2. The side members 4, 4′ are of unequal length, and said side members are provided at their rear ends with inwardly extending brackets 5, 5′ which are connected together by a longitudinal brace 6. The bracket 5 forms a step or offset in advance of the rear end of the frame where the bracket 5′ is located, this construction being adapted to a gang plow composed of two units. When additional units are to be employed additional offsets or brackets are to be formed in the frame structure to accommodate such additional units.

Brackets 7 including vertically disposed sleeves 8 are suitably bolted or otherwise secured upon the ends of the axle, said sleeves affording bearings for the shafts 9 provided at their lower ends with spindles 10 upon which the transporting wheels 11 are journaled. The shafts 9 are vertically slidable in the sleeves 8, and said shafts are provided at their upper ends with collars 12, each having a notch 13 wherein is pivoted one end of a link 14, the other end of which is pivotally connected with one arm of a lever 15 fulcrumed on the main frame B and having a stop member 16 engaging a rack segment 17, whereby the parts will be retained in adjusted position. It will be obvious that by means of the adjusting levers 15 the transporting wheels may be raised or lowered with respect to the frame, thus enabling one of said wheels to be used as a land wheel and the other as a furrow wheel, while for transportation the wheels

may be positioned at the same level. The axle 1 is connected with the side members of the frame B by reinforcing braces 18, and said axle supports intermediate the uprights 2 a pair of plates or castings 19 having forwardly extending arms 20 and rearwardly extending upwardly curved brackets 21. The plates 19 may be secured upon the axle by means of bolts, clips or in any other approved manner and are provided with threaded recesses or sockets 22 for the reception of the lower ends of shafts or uprights 23 having threaded engagement therewith, said shafts or uprights being extended through the cross bar 3 of the front frame and provided with nuts 24 whereby they are firmly secured in position. The forwardly extending arms 20 of the plates 19 are provided with longitudinal slots 25, and adjacent to said slots are upstanding flanges or guides 26 between which the draft slides 27 are guided, said slides being provided with bolts 28 extending through the slots 25 and constituting stops to limit the movement of the slides 27. The slides 27 are also provided with reinforcing ribs 30 which are transversly apertured for the passage of bolts 31.

Pivotally mounted on the curved bracket 21 of each plate 22 is a toothed sector 32 having at its front end an anti-friction wheel 33 and terminating at its rear end in a beak 34. Connected with each sector adjacent to the rear end thereof is a chain 35 which is guided forwardly along the under arcuate edge of the sector in engagement with the teeth of the latter, said chain being connected at its forward end, preferably by means of an elongated rod or link 36, with one end of the transverse connecting bolt 31, whereby the said chain is connected with the slide 27.

Slidably mounted on each of the shafts or uprights 23 is a sleeve 37 having rearwardly extending arms 38, one of which is provided with a lateral flange 39. The beam 40 of a plow unit is pivotally secured between the arms 38, and the parts are so arranged and assembled that the anti-friction wheel 33 at the front end of a sector 32 will normally engage the underside of the flange 39 near the front end of the latter. Pivoted on the plow beam 40 is a latch member 41′ having at its lower end a beveled hook 42 engaging the correspondingly beveled beak 34 at the rear end of a sector 32. Bolted on the beam 40 adjacent to the downturned portion which forms the plow carrying standard 43 is a rearwardly extending arm or bracket 44 having a T-head 45. The plow beam also supports a block 46 carrying an adjustable hook bolt 47 which is connected by a strong helical spring 48 with a hook 49 pivotally associated with the latch member 41′, said hook member being mounted on the latch member intermediate its fulcrum and the upper end thereof which is connected by a link 50 with an adjusting lever 51.

It will be seen from the foregoing description that when the parts are assembled for operation, the beak 34 of the sector 32 engages the hook 42 of the latch member 41, the contacting faces of the beak and the hook being slightly beveled, as shown, to enable the beak to become disengaged from the hook by the exertion of a predetermined degree of tension which may be governed by regulating the tension of the spring 48 by means of the adjustable hook bolt 42. The spring 48 must be sufficiently strong to resist the ordinary strain of plowing. Should this strain become greatly exceeded, as when an obstruction is encountered, the beak of the sector will become disengaged from the hook, and the sector will turn about its axis, causing the anti-friction wheel 33 to exert upward pressure against the flange 39, thereby tilting the front end of the plow beam, together with the sleeve 37 in an upward direction, and throwing the nose or point of the plow unit in an upward direction, causing it to leave the ground until the obstruction has been safely passed, after which the spring 48 by the use of the adjusting lever 51, may be again placed under tension, thus enabling the beak of the sector to be again placed in engagement with the hook 42. The draft is applied to the slides 27 by means of a connecting bar 52 having means such as a clip 53 for the attachment of the draft.

The bracket members 5, 5′ at the rear end of the main frame are each provided with lugs 54 between which and the T-head 45 of the rearwardly extending arm 44 of one of the plow beams 40 is guided in such a manner as to permit vertical movement to take place while lateral movement is prevented. Bolted or secured on the rear sides of the brackets 5, 5′ are segment racks 55 upon which hand levers 56 are fulcrumed, each of said levers being provided at its lower end with a forwardly extending arm 57 having a laterally extending supporting hook 58. Pivoted on the fulcrum of each of the levers 56 is a rod 59 which is loosely supported on one of the supporting hooks 58, the front end of such rod being connected by a link 60 with the T-head 45 of one of the arms or brackets 44 extending rearwardly from the plow beams. Each of the hand levers 56 has a stop member 61 engaging the segment rack 55 for the purpose of retaining the parts in adjusted position. It will be seen that this construction not only enables the plow units to be independently raised or lowered for the purpose of

placing them into and out of engagement with the ground; but in the event of an obstruction being encountered, and the front end of the plow beam being tilted upward to lift the point or nose of the plow, it enables the entire plow unit to move in an upward direction and become disengaged from the ground, owing to the loose disposition of the rod 59 with reference to the supporting hook 58.

Suitably bolted or otherwise mounted upon the main frame and extending rearwardly therefrom is an arm or bracket 62 carrying a sleeve 63 which affords a bearing for a vertical shaft 64 carrying a trailer wheel 65. The shaft 64 which is secured in the sleeve by means of set collars 65' 66 has at its upper end a notch 67 wherein is pivoted a cam-shaped latch member 68 adapted to engage teeth or spurs 69 on the sleeve 63, said cam-shaped latch member being adapted to be secured in engaging or disengaged position with reference to the teeth 69 by means of a spring 70. The collar 66 constitutes a ball race in which anti-friction balls are placed to engage the lower end of the sleeve 63. A suitable seat 71 is provided for the operator in a position which will enable him to conveniently reach the hand levers 56 and the latch member 65 for the purpose of manipulating the same. It will be seen that by disengaging the latch member 68 from the teeth 65 the shaft carrying the trailer wheel may rotate in its bearing, thereby facilitating the turning of the plow. When the latch member 68 is in engagement with the teeth 69, the trailer wheel constitutes a guide whereby the plow is guided.

Suitably mounted on the cross bar 3 of the front frame are segment racks 72 each carrying a hand lever 73 which is connected by means of a link 74 with a collar 75 loosely mounted upon one of the shafts 23 below the sleeve 37. The collars 75 which may be raised or lowered by means of the levers 73 serve to effect vertical adjustment of the front ends of the plow beams which are associated with the sleeves 37, as hereinbefore described. Each of the levers 73 is provided with a stop member 76 engaging the rack 72 for the purpose of retaining the parts in adjusted position.

The plow units 40 have been shown as being equipped with colter blades 77 suitably attached to the landsides thereof, fixed colter blades of this description being in many respects deemed preferable to the rotary colters which are sometimes employed.

Suitably supported on the cross bar 3 of the front frame is a rocking member 78 having a forwardly extending apertured lug 79 with which a pole or tongue may be adjustably connected for the purpose of guiding the machine. Safety chains 80 connect the plow beam with the slides 27, the front ends of said safety chains being connected with the transverse bolts 31.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The general construction which has herein been shown as applied to a gang plow composed of two units may with equal efficiency be applied to the construction of a gang plow having as many units as may be desired. It is also obvious that the invention may be applied to a motor driven plow, as well as to one drawn by draft animals. The plow is especially adapted for sections of the country where stones abound, owing to the construction whereby in the event of such obstructions being encountered, the plow or plows will be caused to leave the ground and to be guided over such obstructions. The construction whereby this operation is effected includes the slides 27 which are loosely and slidably mounted on the brackets 20 so that the stress exerted through them on the chains 35 will operate the lift. The general construction is simple and inexpensive and thoroughly efficient for the purposes for which it is provided.

Having thus described the invention, what is claimed as new, is:—

1. In a wheel plow, an axle, a plate secured thereon and having a forwardly extending slotted arm and a rearwardly extending bracket, a draft slide mounted on the arm, a connecting member extending through the slide and the slotted arm and limiting movement of the slide, a sector pivoted on the bracket and having a beak at its rear end, a spring actuated latch member located in the path of and supporting said beak, a plow beam supporting the latch member, a member with which the front end of the plow beam is pivotally connected, said member being guided for vertical movement and engaged by the front end of the sector, and a flexible element having its rear end connected with the sector adjacent to the rear end of the latter, the front end of said flexible element being connected with the draft slide.

2. In a plow, an axle, a front frame associated therewith and including side members and a cross bar, draft plates secured on the axle and having forwardly extending arms and threaded recesses, draft slides guided on said arms, upright shafts having their lower ends threaded into the recesses of the draft plates and their upper ends extended through the cross bar, sleeves mounted for vertical movement on said shafts and having rearwardly extending arms, plow beams connected pivotally with the last men-

tioned arms, and means associated with the draft plates for tilting the front ends of the plow beams in an upward direction when resistance to the progress of the plow is encountered.

3. In a wheel plow, an axle, a front frame connected therewith and including upright side members and a cross bar, draft plates secured on the axle, upright shafts having their lower ends secured in the draft plates and their upper ends extended through the cross bar, sleeves mounted for vertical adjustment on the shafts, arms extending forwardly from the draft plates, draft slides guided on said arms, plow units including beams having their forward ends connected with the vertically adjustable sleeves, and draft means including suitably supported toothed sectors, the front ends of which are adapted to tilt the front ends of the plow beams upwardly, flexible elements connecting the rear ends of said sectors with the draft slides, and spring actuated latch means mounted on the plow beams and lying in the path of the rearward extremities of the sectors to obstruct the downward movement thereof until a predetermined strain is exceeded.

4. In a wheel plow, a vertically disposed shaft, a sleeve mounted for vertical adjustment thereon and having rearwardly extending arms, one of which is provided with a flange, a plow unit including a beam secured between the arms of the sleeve, a sector supported adjacent to the vertical shaft, said sector having at its rear end a beak and at its front end an anti-friction roller engaging the underside of the flange on one of the rearwardly extending arms, a spring actuated catch mounted on the plow beam and having a hook disposd in the path of the beak at the rear end of the sector, and draft means including a suitably guided slide and a flexible element connecting said slide with the rear end of the sector.

5. In a wheel plow, a vertically movable sleeve, a plow carrying beam having its front end connected with said sleeve, a catch member pivoted on the beam and having a hook at its lower end, an adjustably supported hook bolt, a hook pivoted on the catch member, a spring connecting said hook with the hook bolt, an adjusting lever, a link connecting said lever with the catch member above the pivoted hook, and draft means including a suitably supported sector having a beak at its rear end engaging the hook of the catch member, a suitably supported slide, and a chain connecting the rear end of the sector with the slide; the front end of the sector being adapted when tilted to move the front end of the plow beam in an upward direction.

6. In a wheel plow, a main frame, a front frame associated therewith, an axle supporting the front frame, bracket members constituting the rear end of the main frame and having guide lugs on their front sides, upright shafts associated with the main frame, sleeves guided for vertical adjustment on said shafts, plow carrying beams having their front ends connected with said sleeves, T-headed brackets secured on the plow beams and guided for vertical movement between the lugs on the front sides of the rear brackets of the main frame, and draft means including means whereby the front ends of the plow beams will be tilted upwardly when a predetermined excess of resistance is encountered.

7. In a wheel plow, a frame, a vertically movable supporting member, a plow beam having its front end pivotally connected with the supporting member, means including a pivotally supported sector for moving the supporting member upward to tilt the front end of the plow beam upwardly, and means including a latch member for retaining the pivotally supported sector in normal position, said latch member adapted to be tripped when unusual resistance of the progress of the plow is encountered.

8. In a wheel plow, a frame, a supporting member mounted for vertical movement, a plow beam having its front end pivotally connected with the supporting member, a slidably supported draft member, means including a spring actuated latch for retaining the draft slide against the tension of normal draft, said latch member being adapted to be automatically tripped when resistance to normal draft is exceeded, and means actuated by the slide for moving the supporting member upward, thereby tilting the front end of the plow beam upwardly when the slide is released by tripping of the latch.

9. In a wheel plow, a frame, a vertically movable supporting member, a plow beam having its front end pivotally connected with the supporting member, a pivotally supported sector having at its front end an anti-friction member engaging the supporting member, a draft slide, a flexible element connecting the rear end of the sector with the draft slide, said flexible element being guided along the arcuate edge of the sector, a spring actuated latch member having a beveled hook engaging the rearward extremity of the sector, and lever means for actuating the spring actuated latch to restore the parts to initial position after tripping of the latch.

10. In a wheel plow, a frame, a vertically movable supporting member, a plow beam having its front end pivotally connected with the supporting member, a pivotally supported sector having at its front end

an anti-friction member engaging the supporting member, a draft slide, a flexible element connecting the rear end of the sector with the draft slide, said flexible element being guided along the arcuate edge of the sector, a spring actuated latch member having a beveled hook engaging the rearward extremity of the sector, and a safety chain connecting the draft slide with the plow beam.

In testimony whereof I affix my signature in presence of two witnesses.

JEAN LANGLOIS.

Witnesses:
J. H. BUSHONG,
LE ROY E. ANDERSON.