No. 705,337. Patented July 22, 1902.

R. J. GATLING.

MOTOR PLOW.

(Application filed Sept. 6, 1901.)

(No Model.) 3 Sheets—Sheet I.

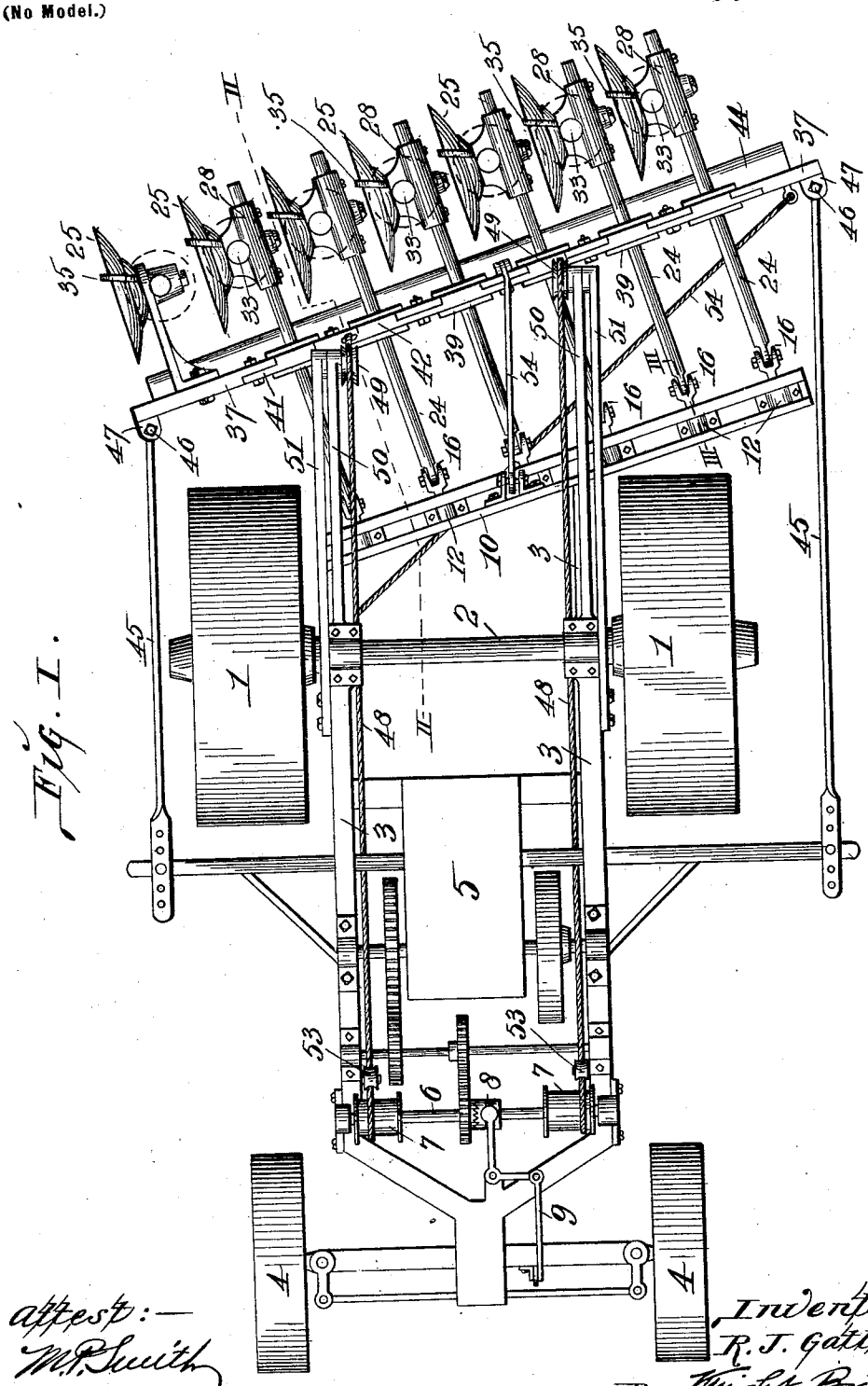


Fig. I.

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A. D. Alexander

Inventor:—
R. J. Gatling.
By Wright Brothers
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. II.

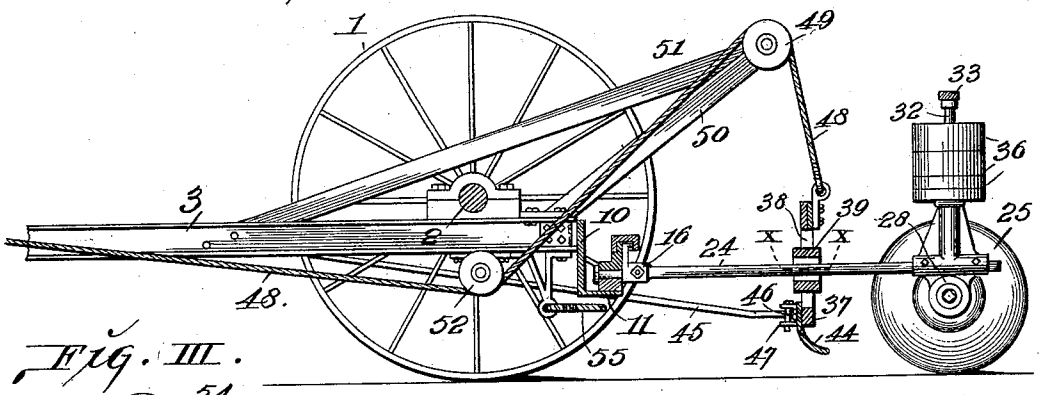


Fig. III.

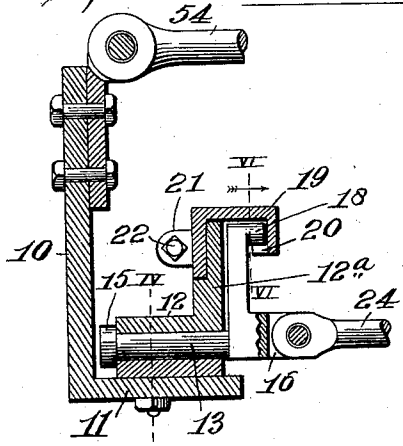


Fig. IV.

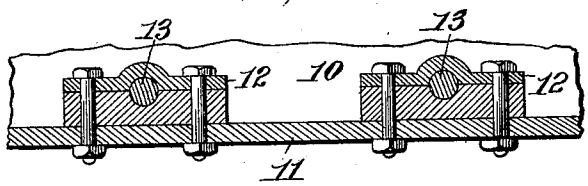


Fig. V.

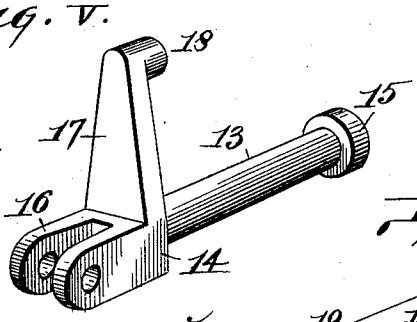


Fig. VI.

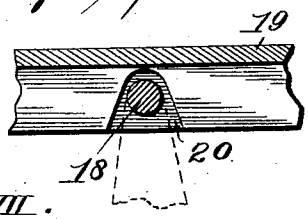


Fig. VII.

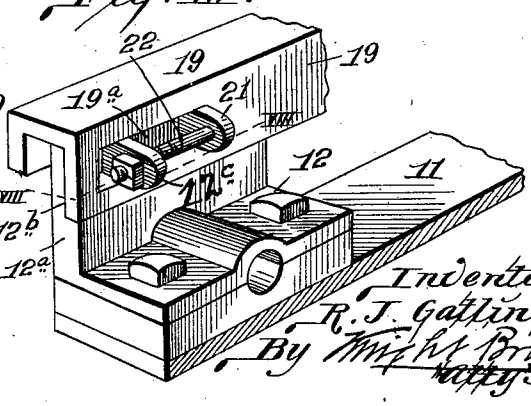
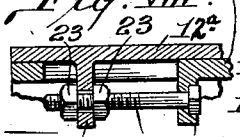


Fig. VIII.



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No. 705,337. Patented July 22, 1902.

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MOTOR PLOW.

(Application filed Sept. 6, 1901.)

(No Model.) 3 Sheets—Sheet 3.

Fig. IX.

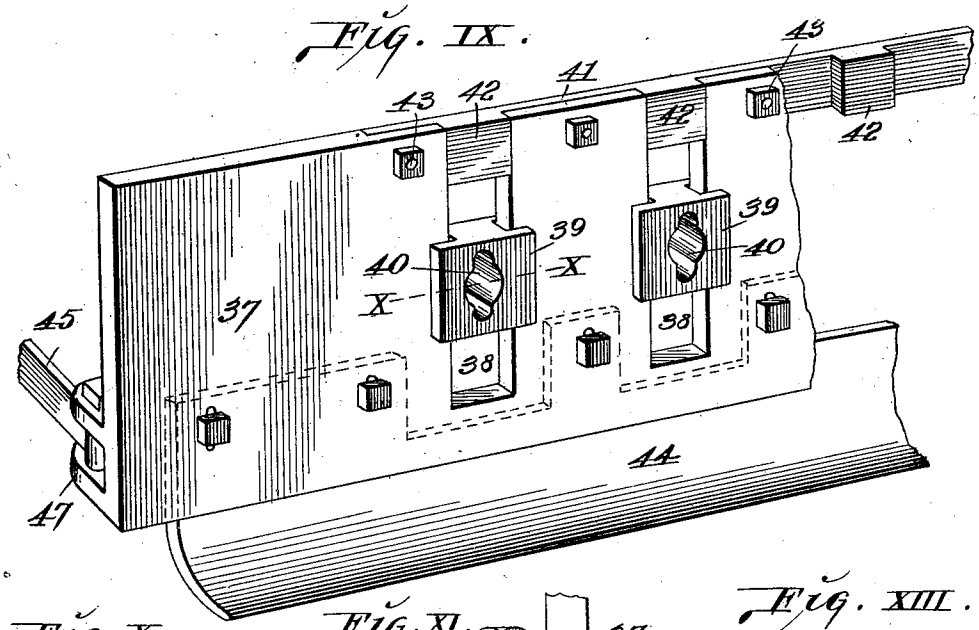


Fig. X.

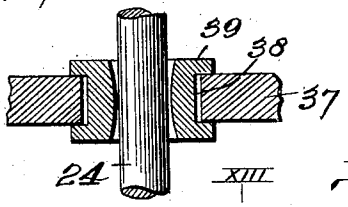


Fig. XI.

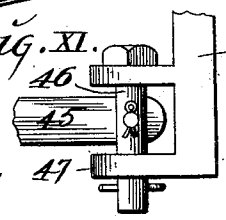


Fig. XIII.

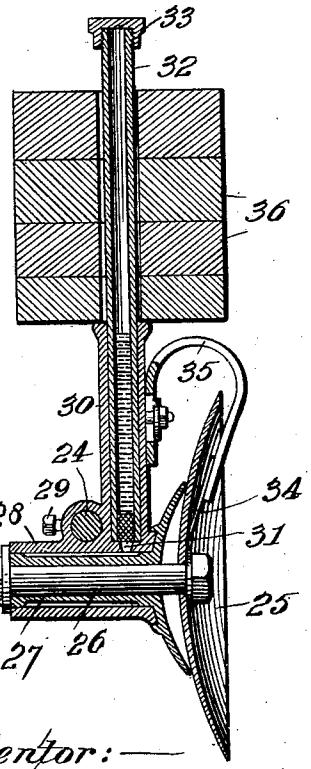


Fig. XII.

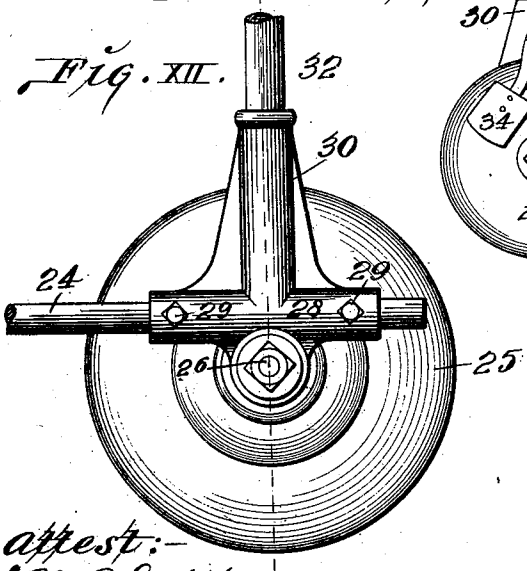
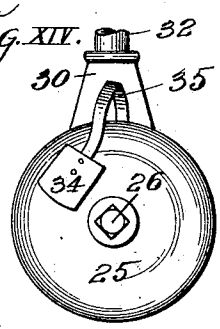


Fig. XIV.



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UNITED STATES PATENT OFFICE.

RICHARD J. GATLING, OF ST. LOUIS, MISSOURI.

MOTOR-PLOW.

SPECIFICATION forming part of Letters Patent No. 705,337, dated July 22, 1902.

Application filed September 6, 1901. Serial No. 74,630. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. GATLING, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Motor-Plows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of plows operated by a self-carried motor, the present improvement having reference mainly to a construction of parts whereby each of a series of disk plows arranged in gang are rendered capable of individual and independent vertical movement and also whereby the plows may be tilted simultaneously to regulate the cut in the ground thereby; also, to means whereby the plows are individually held depressed by weights, and to means for supplying lubricant to the journals of the plows.

My invention consists in the features of construction above referred to and to the other features and details of construction hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of a plow constructed in accordance with my present invention. Fig. II is a view, partly in elevation and partly in vertical section, taken on line II II, Fig. I. Fig. III is an enlarged detail sectional view taken on line III III, Fig. I, through the plow drag-beam and the parts carried thereby. Fig. IV is a vertical sectional view taken on line IV IV, Fig. III. Fig. V is an enlarged detail perspective view of one of the swivels to which the plow draw-rods are connected. Fig. VI is an enlarged detail sectional view taken on line VI VI, Fig. III. Fig. VII is an enlarged detail perspective view of one of the plow draw-rod swivel-bearing boxes and the slide by which said swivels are rocked to alter the inclination of the plows. Fig. VIII is a detail sectional view taken on line VIII VIII, Fig. VII. Fig. IX is an enlarged perspective view of one end of the guide-plate in which the plow draw-rods are seated and move. Fig. X is a sectional view taken on line X X, Fig. IX. Fig. XI is a detail view of one of the swivel connections carried by the guide-plate shown in Fig. IX. Fig. XII is a side view of one of the plows. Fig. XIII is a vertical sectional view taken on line XIII XIII, Fig. XII, showing the oil-well through which lubricant is supplied to the plow-bearings and the weights whereby the plows are held depressed. Fig. XIV is a side view of one of the plows and the scraper applied thereto.

1 designates the main ground-wheels, that receive the axle 2, on which is mounted the plow-frame having side beams 3.

4 designates the steering-wheels, located at the forward end of the plow-frame.

A suitable engine (indicated at 5) is mounted on the plow-frame and has arranged in connection therewith a train of gearing that leads to a shaft 6, bearing a pair of drums 7 and having mounted thereon a clutch 8, adapted to be actuated by a shifter 9, that is under the control of the operator of the plow.

10 designates a drag beam or member fixed to the rear ends of the frame side beams 3 (see Fig. II) and provided with a rearwardly-extending ledge 11. Mounted on the ledge 11 is a series of bearing-boxes 12, that receive the stems 13 of swivels 14, which are loosely seated in said boxes and held from displacement by heads 15 at the forward ends of said stems. Each of the swivels 14 is provided with a fork 16 and has an arm 17, which extends upwardly and carries at its upper end a stud 18. The bearing-boxes 12 are formed with uprights 12^a and are cut away at 12^b to receive a slide 19, adapted for reciprocation on said uprights. The slide 19 is of inverted-U shape and contains interior thereof a series of sockets 20, (see Figs. III and VI,) adapted to receive the studs 18 of the swivel-arm 17, as shown in Fig. III. Projecting from the slide 19 is an ear 21, that receives a bolt 22, (see Figs. III, VII, and VIII,) the bolt being seated in said ear in such manner as to prevent its turning therein and extending therefrom through an ear 12^c, carried by the journal-box uprights 12^a, and projecting through a slot 19^a in the slide 19 to provide for the adjustment of the slide on the uprights 12^a of the bearing-boxes 12. On the bolt 22 are nuts 23, located on each side of the ear 12^c and adapted for manipulation to move the slide 19 longitudinally on the bearing-box uprights, so that the swivels 14 may be rocked in their

bearings by means of the arms 17, with which the slide 19 has engagement.

24 designates draw-rods, having their forward ends pivotally mounted in the forks 16 of the swivels 14.

25 designates the disk plows, rotatably carried by shafts 26, mounted in bushings 27, contained by journal-boxes 28. The journal-boxes 28 are mounted on the draw-rods 24 and are held thereto by set-screws 29.

30 designates upright tubular extensions carried by the journal-boxes 28 and having at their lower ends ducts 31, that lead into the interior of the boxes.

32 designates oil-wells (see Fig. XIII) seated in the upright extensions 30 and provided at their upper ends with caps 33. The oil-wells 32 are adapted to contain a quantity of oil that is delivered therefrom through the ducts 21 to the interior of the journal-boxes 28 to lubricate the bearings of the plows.

34 designates scrapers adapted to rest in contact with the concave faces of the plows to remove accumulations of soil therefrom, the scrapers being carried by spring-supports 35, that are adjustably connected to the journal-box uprights 30.

In varying conditions of soil the plows 25 are required to be held depressed to a more or less degree in the soil being worked, and to provide for such depression I utilize weights 36, placed upon the oil-well 32 and adapted to rest upon the upper end of the journal-box extensions 30. The number of these weights may be increased or diminished, according to requirements, to properly hold the plows depressed, they being easily removed or put in place at the will of the operator of the plow.

37 designates a guide-plate located between the series of plows 25 and the drag-beam 10 and parts carried thereby. This guide-plate is supported in the manner hereinafter described and is provided with a series of vertical slots 38, that receive slide-boxes 39, the slide-boxes being preferably of I shape, so as to be retained in place in the slots. In each of the slide-boxes is an aperture 40, adapted to receive a plow draw-rod 24, the said apertures being preferably of elliptical shape to provide for the passage of the forward flattened ends of said draw-rods by which they are connected to the swivel-forks 16. The upper ends of the slots 38 are preferably closed by a bar 41, extending longitudinally of the guide-plate 37 and having a series of lugs 42, that seat in said slots. The bar 41 is attached to the guide-plate by bolts 43, so that it may be readily removed to permit the introduction or removal of the slide-boxes 39 into or from the slots 38. The plow draw-rods 24 being loosely seated in the slide-boxes 39 and the slide-boxes being loosely positioned in the slots 38 of the guide-plate 37, vertical movement of said draw-rods is permitted independently of each other, by which movement the individual plows 25 are permitted to rise and fall independently of each other, according to undulations or inequalities of the ground being worked and so that the plows will operate to work the soil in a uniform manner. The plows being independently carried and being capable of independent movement also provides for either of them moving vertically to pass over an obstruction, such as a root or a stone, without affecting the movement of any of the other plows. This feature is of material importance, inasmuch as the working of the ground directly in the line of travel of the individual plow that strikes the obstruction is the only one affected by contact therewith and the remainder of the plows operate in the soil without interference.

To change the inclination of the plows relative to the ground being worked thereby, so that furrows of greater or less width will be cut thereby, the plow draw-rods 24 are rocked in the slide-boxes 39 by longitudinal movement of the slide 19, which acts to rock the swivels 14. In shifting the slide 19 the nuts 23 on the bolts 22 are moved in the desired direction to permit movement of the ear 21, carried by said slide, so that the slide is moved longitudinally on the journal-box uprights 12ᶜ. On the movement of said slide the studs 18, seated in the sockets 20 of the slide, are moved and the swivel-arms 17 are rocked to move the swivels 14, so that the plow draw-rods 24 are rotated and the plows 25 will thereby be tilted and their relative inclination to the ground in which they work changed.

44 designates a curved deflector attached to the guide-plate 37 and extending downwardly therefrom, this deflector being adapted to direct weeds, stalks, or roots downward, so that they will be caught beneath and cut by the plows 25 instead of being permitted to pass between the plows and choke them or otherwise interfere with their movement.

The guide-plate 37 is joined to the frame of the plow by connecting-rods 45, that lead rearwardly from the frame to the guide-plate and are connected to said plate by swivel-bolts 46, mounted in ears 47, carried by said plate, to permit elevation of the guide-plate to raise the plows out of the ground and hold them supported in transportation of the plow. For the purpose of raising said guide-plate and elevating the plows from the ground I utilize a pair of ropes or cables 48, that are connected to the plate and pass over sheaves 49, journaled to rearwardly-extending bars 50 and 51, carried by the plow-frame. From the sheaves 49 the ropes 48 extend beneath sheaves 52, mounted in bearings carried by the plow-frame, and thence forwardly beneath guide-sheaves 53 to the drums 7 on the shaft 6. On throwing the clutch 8 into connection with the train of gearing leading from the engine 5, by which the plow is operated, the shaft and drums 7 are rotated and the ropes 48 are wound on said drum and the guide-

plate 37 is raised to lift the plows from the ground.

54 is a stay-rod pivotally connected to the drag-beam 10 and to the upper edge of the guide-plate 37, adapted to prevent rocking of said guide-plate, so that it will always be maintained in upright position.

55 is a stay-rope forming a connection between the rear end of the guide-plate 37 and the frame of the plow adapted to prevent longitudinal movement of said guide-plate under strain of the plows when operating in the ground.

I claim as my invention—

1. In an agricultural implement of the character described, the combination of a drag member, a series of plows independently connected to said drag member, journals on which said plows are mounted, oil-wells carried by said journals, and weights mounted on said oil-wells adapted to hold said plows depressed, substantially as described.

2. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods independently connected to said drag member, a guide-bar in which said draw-rods are arranged to move vertically, and disk plows carried by said draw-rods independently of each other, whereby said plows are rendered capable of individual vertical movement, substantially as described.

3. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods, plows carried by said draw-rods independent of each other, a guide-plate, and vertically-movable slide-boxes arranged in said guide-plate and in which said draw-rods are seated for vertical movement independent of each other, substantially as described.

4. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods independently connected to said drag member, a series of plows independently connected to said draw-rods, a slotted guide-plate, slide-boxes loosely seated in the slots in said plate and adapted for vertical movement therein, said slide-boxes being arranged to receive and guide said draw-rods and permit the vertical movement of said plows, substantially as described.

5. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods connected to said member, plows carried by said draw-rods, a guide-plate, slide-boxes in said guide-plate in which said draw-rods are seated, and weights supported by said plows adapted to depress the plows into the ground, substantially as described.

6. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods, plows carried by said rods, a guide-plate in which said draw-rods are mounted, and a deflector carried by said guide-plate, substantially as described.

7. In an agricultural implement of the class described, the combination of a drag member, a series of journal-boxes mounted on said drag member, swivels having stems mounted in said journal-boxes, arms carried by said swivels, an adjustable slide mounted on said journal-boxes and provided with sockets adapted to receive said swivel-arms, draw-rods connected to said swivels, and plows carried by said draw-rods, substantially as described.

8. In a motor-driven implement, the combination of a motor for propelling the same, of a drag member, of a series of earth-engaging implements carried by said drag member, weights for depressing said drag member and means operated by said motor for raising said member.

9. In a motor-plow, the combination of a motor, of a drag member, of a series of plows carried by said drag member, of weights carried by each of said plows for depressing the same, of ropes for raising said plows, and drums operated by said motor, said drums adapted to wind said ropes and raise said plows.

In testimony whereof I have hereunto set my hand this 3d day of September, 1901.

RICHARD J. GATLING.

In presence of—
E. S. KNIGHT,
N. V. ALEXANDER.