

W. HUBBELL & C. L. HILTON.

GANG PLOW.

APPLICATION FILED AUG. 23, 1907.

916,872.

Patented Mar. 30, 1909.

3 SHEETS—SHEET 1.

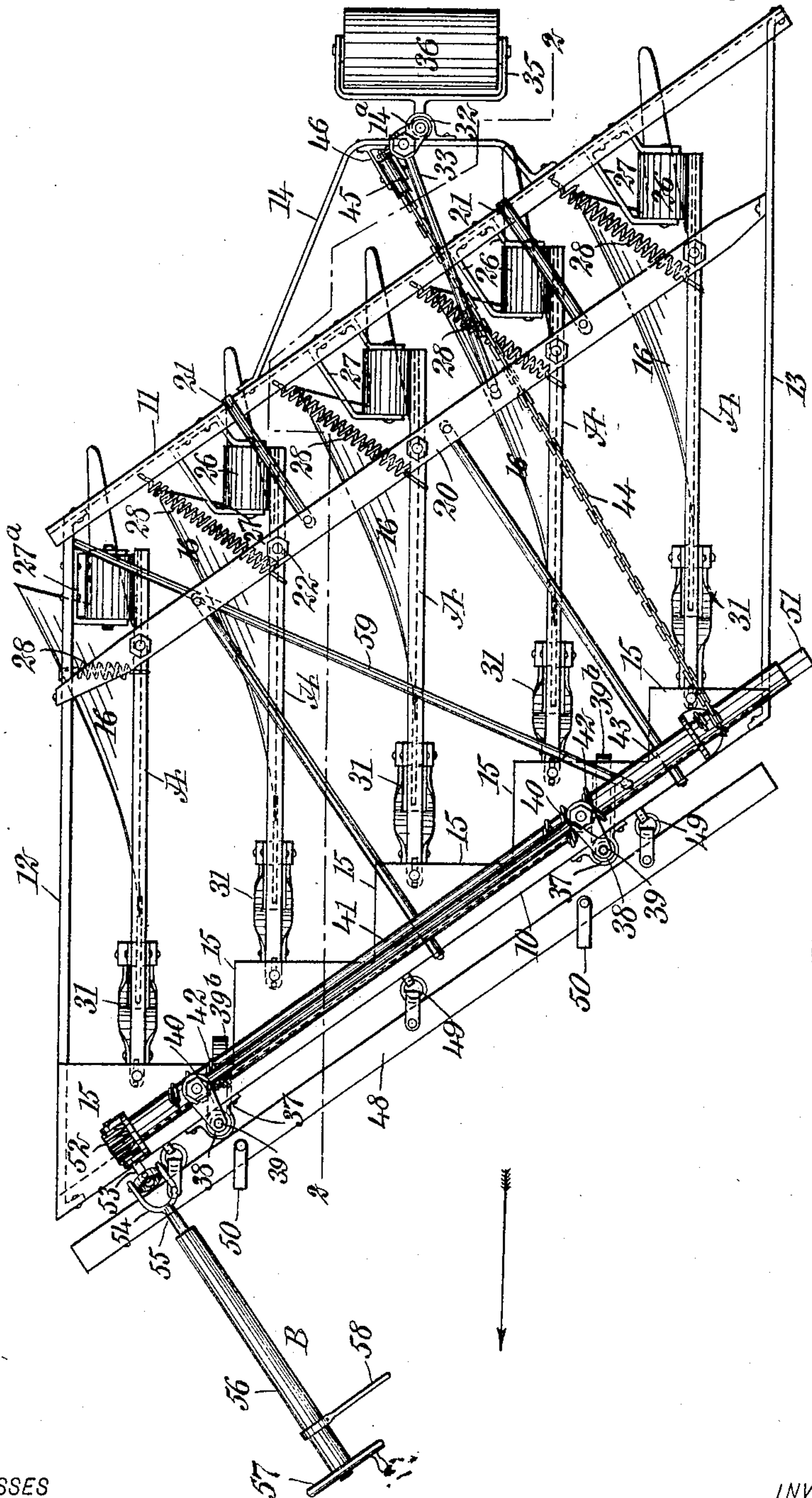


Fig. 1.

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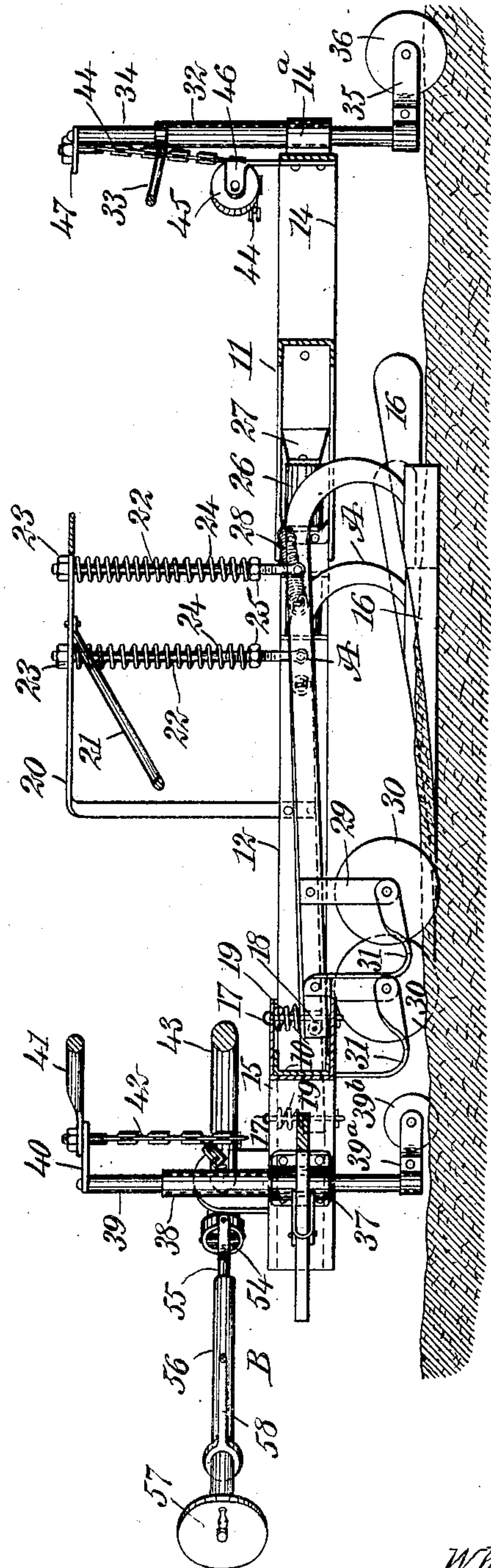


Fig. 2.

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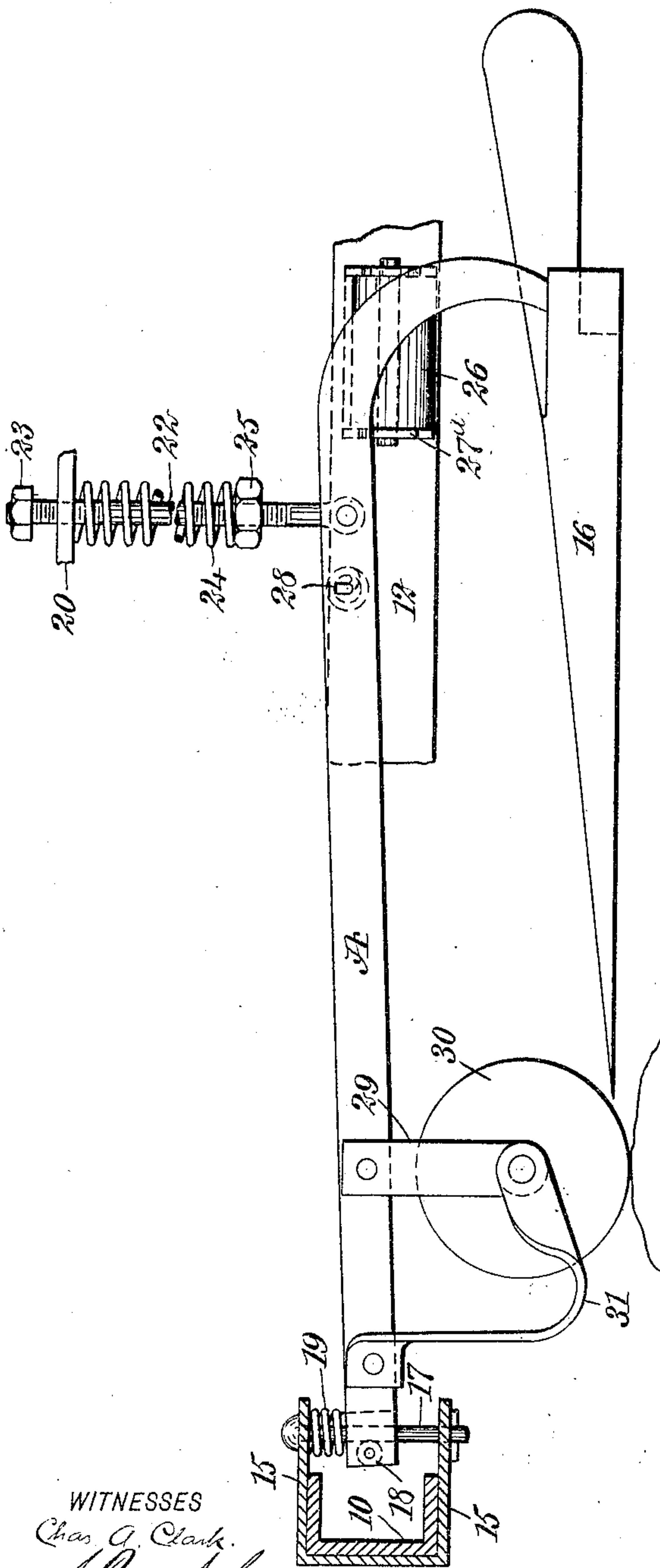


Fig. 3.

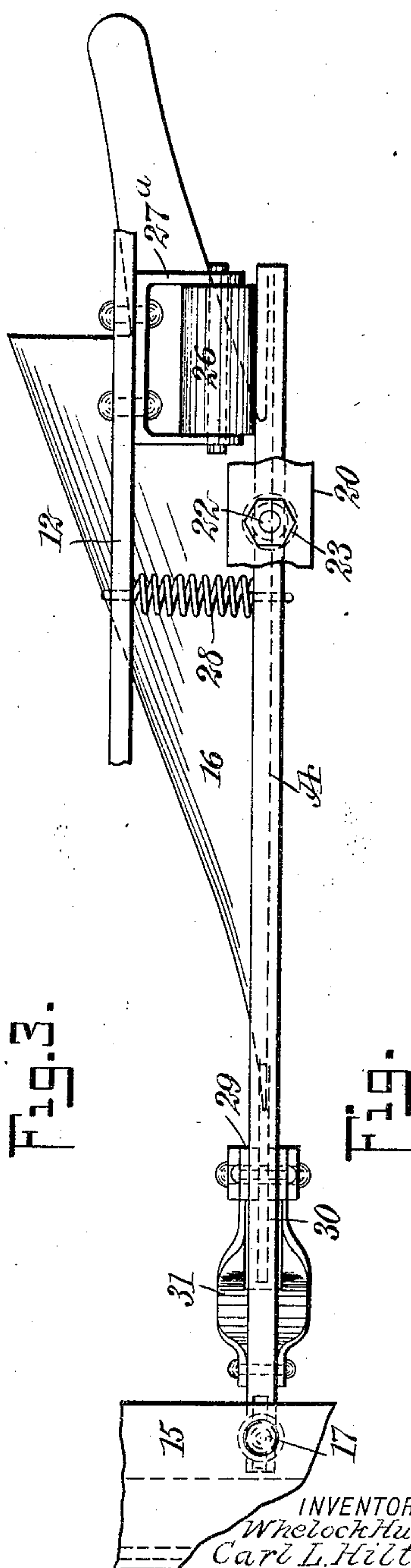


Fig. 4.

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# UNITED STATES PATENT OFFICE.

WHELOCK HUBBELL AND CARL LESLIE HILTON, OF WILTON, NORTH DAKOTA.

## GANG-PLOW.

No. 916,872.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed August 23, 1907. Serial No. 389,820.

*To all whom it may concern:*

Be it known that we, WHELOCK HUBBELL and CARL LESLIE HILTON, citizens of the United States, and residents of Wilton, in the county of McLean and State of North Dakota, have invented a new and useful Improvement in Gang-Plows, of which the following is a full, clear, and exact description.

10 The purpose of the invention is to provide a gang plow which in operation will clear itself from stones or similar obstacles, and the plow beams whereof are free to automatically rise and fall their full length, or independently at the front or at the rear, as occasion may demand, which beams are also capable of lateral movement, being spring-controlled in all directions of their movements.

20 Another purpose of the invention is to provide a simple and effective means for simultaneously raising and lowering all of the plows of the gang, and to provide a colter for each plow that travels ahead of its point adjacent thereto, extending down below the lower line of the point, whereby when a colter rolls over an obstruction it carries the plow point with the same.

30 The invention consists in the novel construction and combination of the several parts as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the figures.

40 Figure 1 is a plan view of the improved plow; Fig. 2 is a section taken practically on the line 2—2 of Fig. 1; Fig. 3 is a detail longitudinal section through a portion of the machine, drawn upon an enlarged scale, illustrating the right-hand plow beam, and the manner in which a colter raises a plow point when riding over an obstruction; and Fig. 4 is a plan view of the parts shown in Fig. 3.

50 The frame of the machine is substantially lozenge shape, comprising a front bar 10, preferably in the form of a channel iron, which front bar is to the line of draft of the machine as is illustrated by the arrow in Fig. 1. A rear bar 11, which is parallel with the front bar 10, and is also preferably made of channel iron, together with two side bars 12 and 13, that are diagonally located with

reference to the line of draft, and furthermore, in the construction of the said frame, a bracket 14 is located at the central portion of the rear frame bar 11, being provided with an auxiliary bracket 14<sup>a</sup> at its central portion, which auxiliary bracket is so located as to be practically opposite the central portions of the front and rear bars of the frame. A series of plow beams A is supported by the said frame. These plow beams are in gangs and a gang may comprise two or more beams, preferably five being employed in connection with one frame. These plow beams A are parallel with the side bars 12 and 13 of the frame, and each beam A at its rear end carries a plow share 16 of any approved type. The beams A at their forward ends are made to enter between the upper and lower members of channel brackets 15, preferably of triangular shape in plan view, which brackets 15 are secured to the outer faces of the front bar 10, as is best shown in Fig. 3.

A pin 17 is passed through each of the channel brackets 15 and through a suitable opening in the forward end of the beam A, and in the opening of the beam through which the pin 17 is passed, a friction roller 18 is located, having bearing against the pin, as is also best shown in Fig. 3, and a spring 19 is coiled around each pin 17, which springs have bearing against the upper faces of the beams A, and the under faces of the upper members of the channel brackets 15 receiving said pins.

90 An arch 20 is sprung across the frame adjacent its rear bar 11, which arch is parallel with said rear bar and extends from one side bar to the other, as is best shown in Fig. 1, and said arch is supported or braced by suitable rods or bars 21 that are attached to the arch and to the forward bar 10 of the frame. A standard 22 is secured in any suitable or approved manner to each of the plow beams A adjacent where the said beams are curved at their rear ends, and the said standards 22 pass up through openings in the arch 20 having free movement in said openings, and the said standards are further provided at their upper ends with nuts 23, or their equivalents. These standards limit the movement of the plow beams in a vertical direction, and the plow shares are held in a suitable position to enter the ground by means of springs 24 that are coiled around the said standards 22, having bearing at their upper ends against the under faces of the arch 20, and at their lower



ends upon a nut 25, said nut being located at the lower portions of the said standards whereby to increase or decrease the tension of the springs 24.

5 Friction rollers 26 are made to engage preferably with the right-hand faces of the plow beams A at their rear portions and the said rollers 26 are mounted in brackets 27 that are secured to the rear bar 11 of the  
10 frame with the exception of the bracket for the roller that engages the right-hand bar, which latter bracket, designated as 27<sup>a</sup>, is secured to the right-hand side bar 12 of the frame, and a spring 28 is provided for each of  
15 the said bars, which springs are attached to the beams adjacent their rear ends and all of the springs with the exception of the right-hand one, are secured to the rear bar 11 of the frame, the right-hand spring being at-  
20 tached to the right-hand side bar 12, as is shown in Figs. 3 and 4. These springs 28 serve to hold the beams against the rollers 26 and likewise admit of the beams and their  
25 plows moving sidewise or laterally should they meet an obstruction, returning the said beams to their normal position after the obstruction is passed, while the springs 24 on the standards 22 admit of the rear end por-  
30 tions of the plow beams being raised to mount an obstruction returning the beams to their normal position after the obstruction is passed; and the forward springs 19 admit of upward movement of the beams at their  
35 forward ends and return the said beams to their normal position forward when the springs are relieved from tension.

Adjacent the forward end of each beam A, a hanger 29 is secured to the said beam extending down therefrom, and in each hanger  
40 29, a rolling colter 30 is mounted to revolve. These colters are opposite the points of the shares 16, and are quite close to said points and extend down below the points so that when a colter travels over a stone or other  
45 obstruction, as is shown in Fig. 3, the share carried by the beam with which the colter is connected is lifted well up from such obstruction. A brace 31 is provided for each  
50 of the colters 30, and these braces serve as shoes and are secured to the beams A between the hangers 29, and the forward ends of said beams, and are carried down from the beams and are then curved upwardly and  
55 rearwardly and their rear ends are bifurcated and carried sufficiently far to the rear to receive the trunnions of the colters 30 after they have passed through the hangers 29. These shoes 31 serve to prevent the plows from going too deep when traveling over a  
60 mound or ridge lengthwise thereof. A tubular standard 32 is secured to the rear auxiliary bracket 14<sup>a</sup>, as is best shown in Fig. 2, and a brace 33 extends from the upper portion of the said tubular standard to the  
65 said arch 20. A spindle 34 is mounted to

slide in the tubular standard 32, extending above and below said standard, and at the bottom end of the spindle 34 a horizontal bearing 35 is provided for the roller 36.

At the forward portion of the frame, adja- 70 cent each end of the front bar 10 thereof, brackets 37 are firmly attached, and each of the said brackets has attached thereto an upwardly extending tubular standard 38 corresponding to the tubular standard 32 hereto- 75 fore referred to, and in each tubular standard 38, a spindle 39 is mounted to slide, extending also above and below the said standard 38, and rearwardly extending arms 40 are secured to the upper ends of the spindles 39, 80 and a connecting rod 41 is attached to these arms. A horizontal bracket 39<sup>a</sup> is located at the lower end of each spindle 39 and each bearing 39<sup>a</sup> carries a supporting wheel 39<sup>b</sup>. Thus by reason of the connection 41 between 85 the two spindles 39 the said spindles are made to turn simultaneously and in the same direction.

Chains 42 are secured to the inner end portions of the arms 40, usually where they con- 90 nect with the aforesaid rod 41, and these chains are carried down and are secured to and are adapted to be wound around a shaft 43 that is journaled in suitable bearings located upon the upper face of the front bar 10 95 of the frame, as is illustrated in Figs. 1 and 2. A third chain 44 is likewise secured to the shaft 43, usually at its left-hand end portion, and this chain 44 is carried rearward and passed beneath and in engagement with a 100 grooved roller 45 mounted in suitable bearings 46 secured to the central portion of the rear bar member 11 of the frame, as is illustrated in Fig. 2, and the said chain 44 is carried over said roller 45 to an arm 47 located 105 at the upper end of the rear spindle 34, each chain being attached to said arm, as is also shown in Fig. 2. Thus by turning the shaft 43 in one or the other direction the frame in its entirety and the parts carried thereby are 110 raised and lowered so that the plows may enter the ground to a greater or lesser degree, or be carried sufficiently far above the surface to permit the machine to be readily transported from place to place. It is also 115 evident from the foregoing description that the beams A are capable of upward movement at their ends throughout their length, and that they are likewise all capable of lateral movement, and are spring-controlled in 120 both movements. Therefore when a plow-share has cleared an obstruction whether by riding over it or by sliding by its side, after the obstruction is passed the beam in action is returned to its normal position. 125

A draft bar 48 is connected by suitable links 49 to the front bar 10 of the frame, and this draft bar is provided with a clevis 50 whereby to connect the machine with a trac- 130 tion engine or other type of motor, and it



may be here remarked that the left-hand end portion of the shaft 43 is rendered polygonal and is reduced, as is shown at 51 in Fig. 1. At the right-hand end of the shaft 43, a worm wheel 52 is secured, and this worm wheel engages with the worm, not shown, but which is carried by a shaft 53 mounted transversely upon the right-hand end portion of the forward frame member, as is shown in Fig. 1. This shaft 53 is connected by a knuckle joint 54 with a member 55 with a tumbling rod that leads to the engine, and the other member 56 of the said tumbling rod B. turns with the member 55 and slides thereon, and the outer or telescopic member 56 of the said tumbling rod is provided with a crank disk 57, whereby to make suitable connections with a driving mechanism of the engine or motor, and a standard 58 is provided for the tumbling rod, being loosely mounted thereon, adapted to have bearing on a platform or a suitable support on the engine.

The frame is braced by means of a transverse rod 59 that extends from the left-hand front portion of the frame to the right-hand rear portion, as is shown in Fig. 1, so that the frame is rendered exceedingly stiff, and is capable of standing hard usage. The left-hand end of the shaft 43 is squared, or made polygonal in order to receive one end of a suitable coupling when two gangs of plows are to be operated together, and in such an event the draft bar 48 is made to extend the full length of the front portion of the frames of both gangs.

Having thus described our invention, we claim as new and desire to secure by Letters Patent,—

1. In plows, a frame, wheel supports on which the frame is slidably mounted, a beam within the frame, a share therefor, a pivotal and suspension support for the said beam carried by the said frame, the suspension support being slidable in the frame, springs mounted on said supports exerting downward tension on said beam, a spring connected with the frame and the beam exerting lateral tension on the latter, and means for raising and lowering the frame.

2. In plows, a frame, wheel supports on

which the frame is slidably mounted, a beam within the frame, a share therefor, a pivotal and a suspension support for the said beam carried by the said frame, the suspension support being slidable in the frame, springs mounted on said supports exerting downward tension on said beam, a spring connected with the frame and the beam exerting lateral tension on the latter, means for raising and lowering the frame, which means is fitted for coupling with corresponding means on a second frame, and a roller bearing for the beam, the said beam being held to said bearing by said laterally acting spring.

3. In plows, the combination with a frame, a beam within the frame mounted for pivotal and vertical movement, a share for the beam, means for exerting yielding pressure upon the beam in a downward direction, and means for exerting tension on the beam in a lateral direction, of a colter supported from the said beam in front and adjacent the point of the share, the said colter extending down below the plane of the bottom of the share.

4. In plows, the combination with a frame, a beam within the frame mounted for pivotal and vertical movement, a share for the beam, means for exerting yielding pressure upon the beam in a downward direction, and means for exerting tension on the beam in a lateral direction, of a colter supported from the said beam in front and adjacent the point of the share, the said colter extending down below the plane of the bottom of the share, a rolling bearing for the beam, and a shoe secured to the beam and to the supports for the colter, which shoe is located in front of said colter and acts as a brace therefor.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses:

WHELOCK HUBBELL.  
CARL LESLIE HILTON.

Witnesses:

J. CHARLES ANDERSON,  
JOHN HUBBELL.