

No. 664,109.

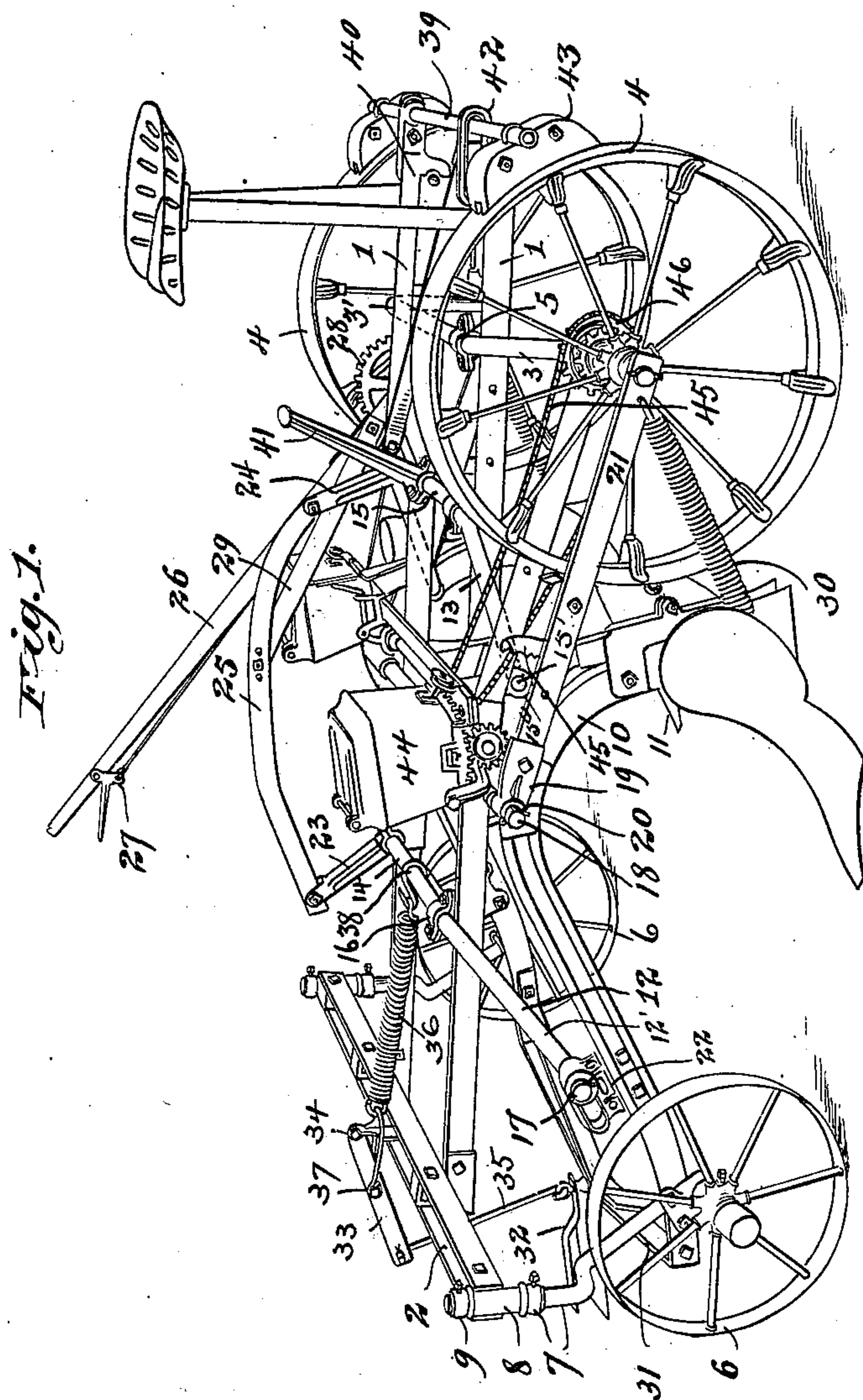
Patented Dec. 18, 1900.

S. H. TINSMAN.  
WHEELED PLOW.

(Application filed July 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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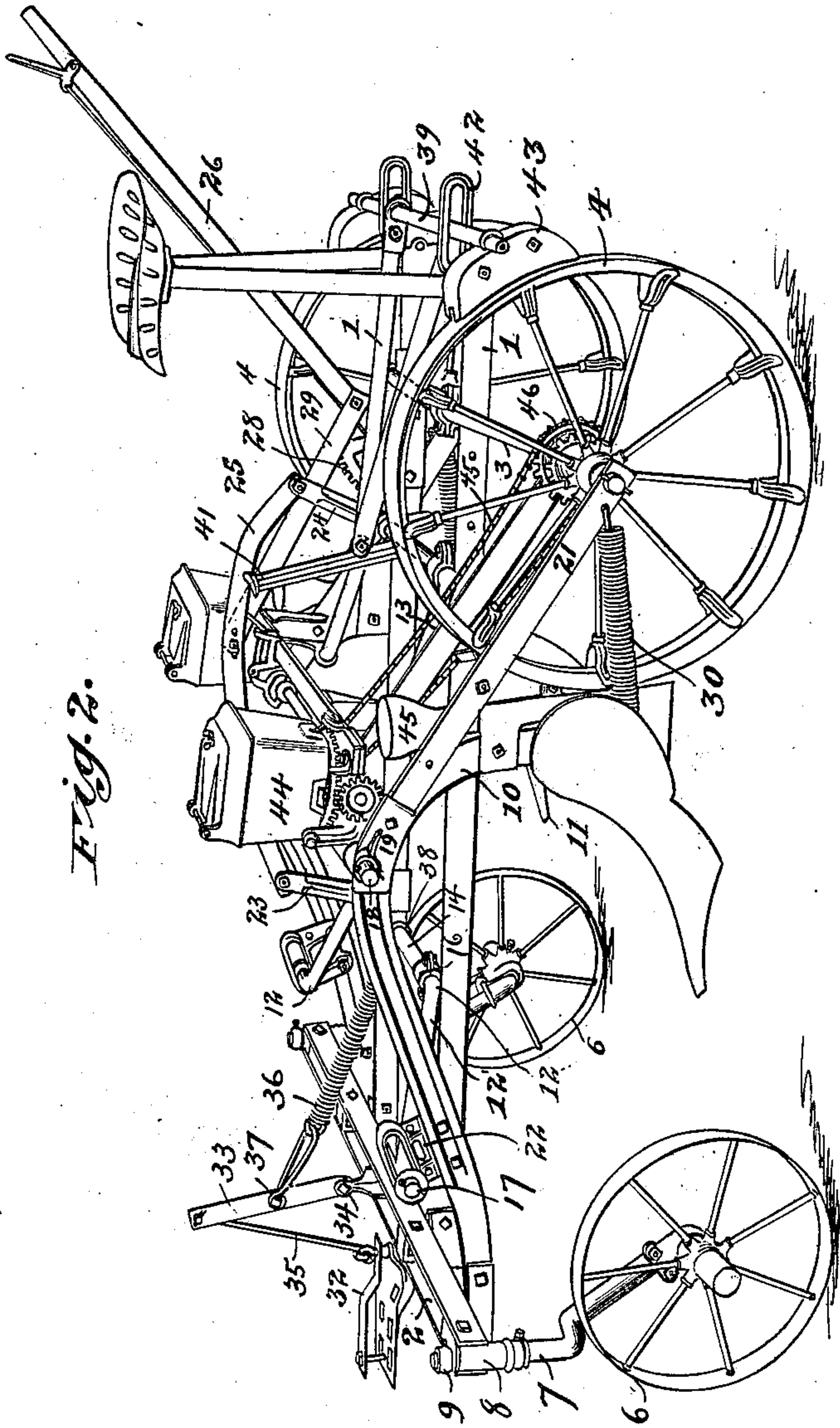
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# UNITED STATES PATENT OFFICE.

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## WHEELED PLOW.

SPECIFICATION forming part of Letters Patent No. 664,109, dated December 18, 1900.

Application filed July 12, 1900. Serial No. 23,307. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL H. TINSMAN, of Rock Island, county of Rock Island, and State of Illinois, have invented certain new and useful Improvements in Wheeled Plows, of which the following is a specification.

This invention relates to improvements in double-row lister-plows; and among its salient objects are to provide a machine of the character referred to wherein the plows are so mounted as to be capable of being elevated and lowered together by means of a single hand-lever, to provide controlling mechanism for raising and lowering the plow which while raising both the front ends of the plow-beams and the plows themselves at the same time is arranged to lift the plow to a greater extent than the points of the beams, to provide a supporting-frame which while it serves to support the plows securely both in operative position and when elevated at the same time permits the requisite freedom of movement of the plows when the latter are in lowered or operative position to insure the greatest ease of working and adaptability to the surface being treated, to provide means whereby the dead-weight of the plows is in part counterbalanced by mechanism tending to lift the latter, to provide means for shifting the weight of the heavy doubletrees used in connection with a machine of this character from the ends of the plow-beams to the carrying-frame proper when the plows are elevated, thus avoiding the objectionable vibration or rocking of the plows upon the supporting-frame, and in general to provide improved details of construction whereby the apparatus as a whole is rendered simple, efficient, and capable of successful use under widely-varying circumstances.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and the same will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of an apparatus embodying my invention, the plows being shown in lowered or operative position.

Fig. 2 is a similar perspective view with the plows elevated.

Referring to the drawings, 1 1 designate main side bars, and 2 a front cross-bar rigidly secured to the front ends of the side frames 55 1, these members constituting the principal members of the main frame. Said main frame is supported at its rear end by means of an arched axle 3, supported at each side upon main supporting-wheels 4, the side bars 60 1 being arranged to extend inside of and beneath the arched portion 3' of the axle and being conveniently pivotally supported therefrom by means of clips 5, arranged to embrace the horizontal portion of the arch and 65 so secured thereon as to be capable of oscillatory movement relatively to the latter. The front end of the main frame is supported by means of a pair of caster-wheels 6, connected with the respective ends of the cross 70 frame member 2, said caster-wheels being mounted upon standards 7, the upper ends of which are rotatably engaged with vertically-disposed sockets 8, carried by the said frame member 2. Conveniently and as herein 75 shown the standards 7 are engaged to extend through the sockets 8 and are provided above and below the latter with confining-collars 9, adjustably secured in position by means of set-screws, so that the frame may be raised 80 or lowered relatively to the casters by adjusting the position of the confining-collars upon said standards.

10 11 designate as a whole the two plows, which are mounted parallel with each other, 85 one at each side of the main frame, and in order to support said plows movably upon the main frame a pair of cranked shafts (designated as a whole 12 13, respectively) is provided, mounted, respectively, above the front 90 portions of the plow-beams and above the plows proper upon the main frame. Each of said cranked shafts is provided with a horizontal portion, as 14 15, mounted to extend across and rest upon the main side frame 95 members and pivotally secured thereon by means of suitable clips, as 16, and each shaft also comprises a pair of crank-arms, as 12' 13', respectively, the two arms of each shaft being arranged to extend parallel with each 100



other and terminating in outturned crank portions 17 and 15', respectively, which are severally so connected as to lift the plows. Preferably, and as shown herein, the crank-arms of the two cranked shafts extend approximately parallel with each other, the forward pair occupying a substantially horizontal position when the plows are uplifted and the rear pair occupying a similar position, though elevated slightly above a horizontal position, as best indicated in Fig. 2, and vice versa when the plows are lowered the crank-arms will bear substantially the same approximately parallel relation. It is to be noted, however, that the arm portions 13' of the shaft 13 are somewhat longer than the arms 12' of the shaft 12, so that, although the two pairs of arms oscillate through approximately the same angular distance, the rear ends of the plows will be elevated considerably more than their front portions.

In the preferred embodiment of the invention shown herein the crank portions 15' of the crank-shaft 13 are not connected directly with the plows, but indirectly through the medium of draft-bars 21, which engage a tie-bar 18, extending between and engaged with said plows at points located approximately at the highest points of the arched portions, said bars being connected with the beams by means of suitable clips 19, having bearing-apertures 20. Said draft-bars 21 are arranged in pairs, one at each side of the plow-beam, and extend from the bar 18 rearwardly to and are engaged with the axle portion of the main axle 3 at the respective sides of the main supporting-wheels 4 thereon, while the crank portions 15' of the crank-shaft 13 are connected with the inner members of said pairs at points intermediate of their lengths by means of clips 15". Inasmuch as the draft-bars 21 are longer than the crank-arms of the crank-shaft 13, it will be obvious that as the plows are raised or lowered the main frame will be shifted longitudinally relatively to the axis of the main axle, and such movement is permitted by the rocking of the arch 3 of said main axle, as will be apparent by the different positions which said arch occupies relatively to said main frame in Figs. 1 and 2.

In order to provide for the longitudinal movement of the main frame relatively to the plows, the crank portions 17 of the crank-shaft 14 are united with the forward portions of the plow-beams by means of slotted clips or supports 22.

As a preferred means of operating the crank-shafts each one is provided with an upstanding rigid arm, as 23 24, arranged substantially in longitudinal alinement with each other adjacent to one of the main side frame-bars and connected with each other by means of a link-bar 25, pivotally engaged with their outer ends.

26 designates a hand-lever pivotally connected at one end with the main side frame member 1 and provided with the usual latch

mechanism 27, adapted to cooperate with a notched segment 28, also mounted upon said main side frame member 1 concentrically with the pivotal axis of the hand-lever. The hand-lever is connected with the link-bar 25 by means of an operating-link 29, so that oscillation of the hand-lever will impart a simultaneous movement to the cranked shafts.

In order to in part counterbalance the dead-weight of the plows and facilitate the lifting of the latter, a pair of coiled contractile springs 30 is provided, one for each plow, each having one end connected with the lower part of the plow beneath the share or mold-board and its opposite end connected with one of the brace-bars 21 adjacent to the main axle, so as to exert an obliquely upward and rearward pull.

The front ends of the plow-beams proper are rigidly united with each other, preferably by means of a duplex connecting-bar 31, with the central portion of which is connected a suitable clevis 32 for the attachment of the doubletrees. As a special feature of improvement I connect the connecting-bar 31 with the front portion of the main frame by means of a mechanism which is automatically brought into operation to carry the forward ends of the plows and the doubletrees connected therewith when the plows are elevated, but is shifted into such position as to exert practically no carrying action upon the plows when the latter are in lowered position. As a preferred means of carrying out this feature a toggle-bar 33 is pivotally connected at one end, as at 34, with the cross frame member 2, so as to oscillate in a vertical plane, and the outer or swinging end of said toggle-bar is connected with the central portion of the connecting-bar 31 by means of a link 35, the length of this link being such as to bring said toggle-bar into an approximately horizontal position when the plows are lowered. With the central portion of the toggle-bar 33 is connected a coiled contractile spring 36, which extends thence rearwardly to and is connected with a relatively-fixed part of the main frame conveniently with the cranked shaft 14, the point of connection of said spring being such that when the plows are lowered the point of connection 37 of the spring with the toggle-bar, the pivotal axis 34 of the latter, and the point of connection 38 of the spring with the crank-shaft will be substantially in alinement, so that the spring will exert no lifting effect upon the plows. When, however, the toggle is flexed upwardly, so as to carry said points out of alinement, the contractile action of the spring will serve to hold the plows uplifted, as shown clearly in Fig. 2.

The apparatus is preferably, and as shown herein, provided with a wheel-scraping mechanism which may be of any usual or preferred construction and which constitutes no part of the present invention, that shown herein comprising a scraper-bar 39, mounted to extend transversely in rear of the main



wheels and carried upon reciprocating supporting-bars 40, which extend from the bar forwardly to and are connected with a foot-lever 41, pivotally mounted upon the crank-shaft 15. The rear ends of said reciprocatory bars are guided in slotted castings 42, mounted upon the rear ends of the main side frames, and the scraper-bar is provided at each end with scraper-blocks 43, adapted to be brought into bearing with the wheels by the shifting forward of the foot-lever in the usual manner.

The apparatus is also provided with a seed-dropping mechanism, which may be of any preferred or suitable construction and the details whereof form no part of the present invention. As shown herein, said mechanism comprises a pair of seed-hoppers 44, respectively located above the plows 11 and 12 and mounted upon the crank-shaft 13, so as to move with the plows, and arranged to discharge into seed-chutes 45, which convey seed to the furrows in rear of the respective plows. A suitable dropping mechanism is actuated by means of a link drive-belt 46, operatively connecting the same with a sprocket-wheel 47, mounted upon one of the main supporting-wheels 4, as usual. The main frame is also provided with a seat 48 for the driver, which is mounted upon the main frame at a point in rear of the point of connection of said frame with the arched axle in a position to afford convenient access to the hand-lever and foot-lever hereinbefore described.

The operation of the machine has been sufficiently indicated in connection with the description of the construction thereof to be readily understood and need not therefore be repeated.

While I have shown and described what I deem to be a preferred embodiment of my invention, yet it is to be understood that the details thereof may be modified to some extent without departing from the spirit of the invention, and I do not therefore wish to be limited to the exact details shown herein except as they may be made the subject of specific claims.

I claim as my invention—

1. In a machine of the character described, the combination of a main frame, front and rear supporting-wheels directly connected therewith, a pair of plows, means for supporting said plows from said frame and for raising or lowering them bodily relatively thereto, comprising a pair of crank-shafts mounted upon the main frame at longitudinally-separated points and each provided with a pair of crank-arms, the crank-arms of the front and rear crank-shafts being respectively arranged to act upon the front and rear portions of said plows, interconnections between said crank-shafts whereby they are caused to move together, and a hand-lever operatively connected therewith and pivotally-connected draft-bars connecting said plows with the main axle, the connections between the plows and supporting-frame being constructed to impart a

movement of relatively greater extent to the rear ends of the plows than to their front ends and the connections forming the front supports being constructed to afford lost motion, whereby such differential movement is permitted, substantially as described.

2. In a machine of the character described, the combination of a main frame, supporting-wheels connected therewith, a pair of plows supported from said frame and means for simultaneously lifting said plows bodily, comprising a pair of crank-shafts mounted upon the main frame at longitudinally-separated points and each provided with a pair of crank-arms, the crank-arms of the front and rear crank-shafts being respectively arranged to act upon the front and rear portions of said plows, interconnections between said crank-shafts whereby they are caused to move together, a hand-lever operatively connected therewith and draft-bars connecting the plows with the main axle, the arms of the rearward crank-shaft being engaged with the proximate draft-bars and arranged to act on the plows through the medium of the latter, as and for the purpose set forth.

3. In a machine of the character described, the combination of a pair of main supporting-wheels, an arched axle connecting said supporting-wheels, a horizontal main frame pivotally connected adjacent to its rear end with said arched axle and provided at its forward end with a pair of caster supporting-wheels, a pair of plows arranged parallel with each other, two cranked shafts mounted upon said main frame at longitudinally-separated points and having their crank-arms connected with the respective plows at correspondingly longitudinally separated points, a connecting-link operatively connecting said cranked shafts to cause the same to move together, a hand-lever operatively connected with the connecting-link, a tie-bar extending transversely between and connecting said plows and draft-bars connecting said tie-bar with the axle portions of the main arched axle at each side of the frame, substantially as described.

4. In a machine of the character described, the combination of a pair of main supporting-wheels, an arched axle connecting said supporting-wheels, a horizontal main frame pivotally connected adjacent to its rear end with said arched axle and provided at its forward end with a pair of caster supporting-wheels, a pair of plows arranged parallel with each other, two cranked shafts mounted upon said main frame at longitudinally-separated points and having their crank-arms connected with the respective plows at correspondingly longitudinally separated points, a connecting-link operatively connecting said cranked shafts to cause the same to move together, a hand-lever operatively connected with the connecting-link, a tie-bar extending between and connecting said plows, draft-bars connecting said tie-bar with the axle portions of



the main arched axle at each side of the frame, and a coiled contractile spring extending from the lower rear part of each plow obliquely, upwardly and rearwardly to supports connected with the main axle and tending to lift the plow bodily, substantially as described.

5. In a machine of the character described, the combination of a pair of main supporting-wheels, an arched axle uniting the same, a pair of main side frame-bars arranged parallel with each other and each pivotally connected with the arched portion of said axle, a cross frame-bar rigidly connected with the forward ends of said side frame-bars, a pair of supporting-wheels connected with the outer ends of said cross frame-bar, a pair of plows arranged parallel with each other and having their front beam ends united, said plows being located immediately in front of the respective main supporting-wheels, a tie-bar extending between and connecting said plows, a draft-bar connecting said tie-bar with the main axle at each side of the machine, a cranked shaft provided at each end with a crank-arm pivotally connected with the proximate draft-bar at a point intermediate the length of the latter and having its intermediate rock-shaft portion connected with the main frame at a point in rear of its point of connection with the draft-bar, a second crank-shaft having similar crank-arms respectively connected with the plow-beams near the front ends of the latter, a rigid arm upon each of said crank-shafts, a connecting-link uniting said crank-shafts so as to hold their several pairs of crank-arms approximately in the same angular relation to the main frame; the rearward crank-shaft having arms longer than those of the forward crank-shaft, and a hand-lever operatively connected with said connecting-link and adapted to oscillate said crank-shafts together, substantially as described.

6. In a machine of the character described, the combination with the main frame, the two cranked shafts pivotally supported thereon, the pair of plows supported by said cranked shafts, the mechanism imparting a longitudinal shifting of the main frame relatively to the main supporting-wheels during the raising and lowering of the plows, and the slotted supports uniting the crank-arms of the forward crank-shafts with the plow-beams, substantially as described.

7. In a machine of the character described, the combination of a main supporting-frame and a plow flexibly suspended from said main frame, of an auxiliary supporting mechanism

for carrying the front end of the plow independently of the main supporting mechanism, comprising a toggle-bar pivotally connected at one end with the main frame above the front end of the plow-beam, to oscillate in a vertical plane, a connecting-link connecting the swinging end of the toggle-bar with the plow-beam, and a contractile spring connected at one end with the intermediate portion of the toggle-bar and extending thence rearwardly to, and connected with, a relatively-fixed part of, or upon, the main frame, the relative arrangement of said parts being such that when the plow is elevated, the toggle-bar will be held in a position approaching the vertical and the front end of the beam thereby carried by the tension of the spring, and when the plow is lowered, the toggle-bar will be carried into a position to bring the tension of the spring approximately in alignment with its pivotal axis, so that the spring will exert practically no flexing action thereon, substantially as and for the purpose set forth.

8. In a machine of the character described, the combination of a main supporting-frame, an arched main axle provided with main supporting-wheels and having its arched portion connected with said main frame, a pair of plows flexibly supported thereon in parallel relation to each other, a draft-rigging connected directly with the front ends of the beams of said plows, and draft-bars pivotally connected with said plows and extending thence to and connected with said main axle of the machine, whereby the line of draft is imparted from the plow-beams directly to the axle of the main frame, substantially as described.

9. In a machine of the character described, the combination of a main supporting-frame, a wheeled main axle supporting the rear portion of said frame, a pair of plows arranged parallel with each other at the respective sides of said frame and means for elevating said plows, comprising a cranked shaft mounted upon the forward end of said main frame and having a pair of crank-arms respectively engaged with the front portions of the beams of the plows, draft-bars pivotally connected with the rear portions of the beams of the plows and extending thence to and pivotally connected with the main axle, and means for positively oscillating said crank-shaft and draft-bars, as and for the purpose described.

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