No. 704,274. Patented July 8, 1902.

C. S. RUEF & C. L. TOMLINSON.

RIDING PLOW.

(Application filed July 15, 1901.)

(Model.) 4 Sheets—Sheet 1.

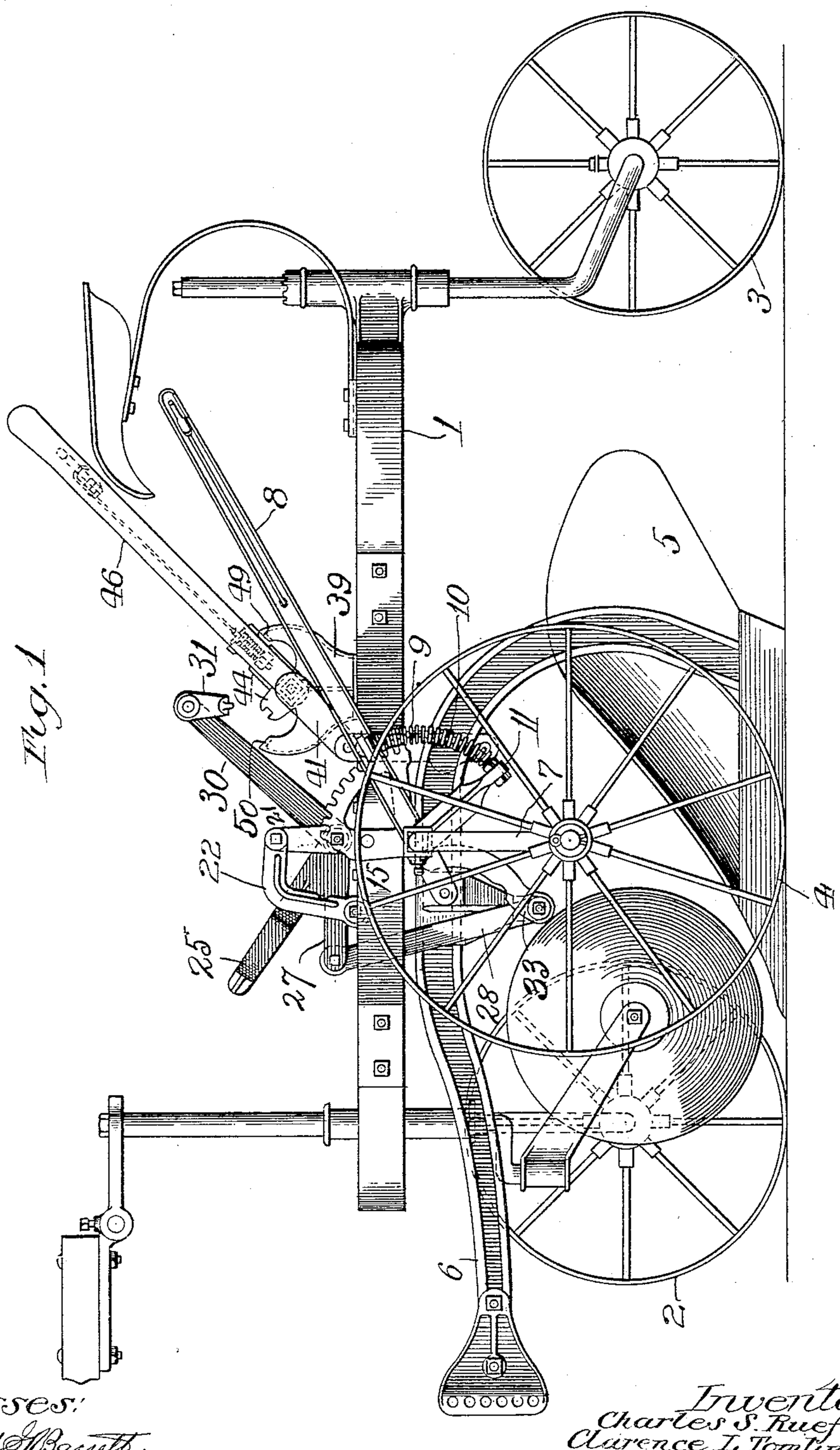

Fig. 1.

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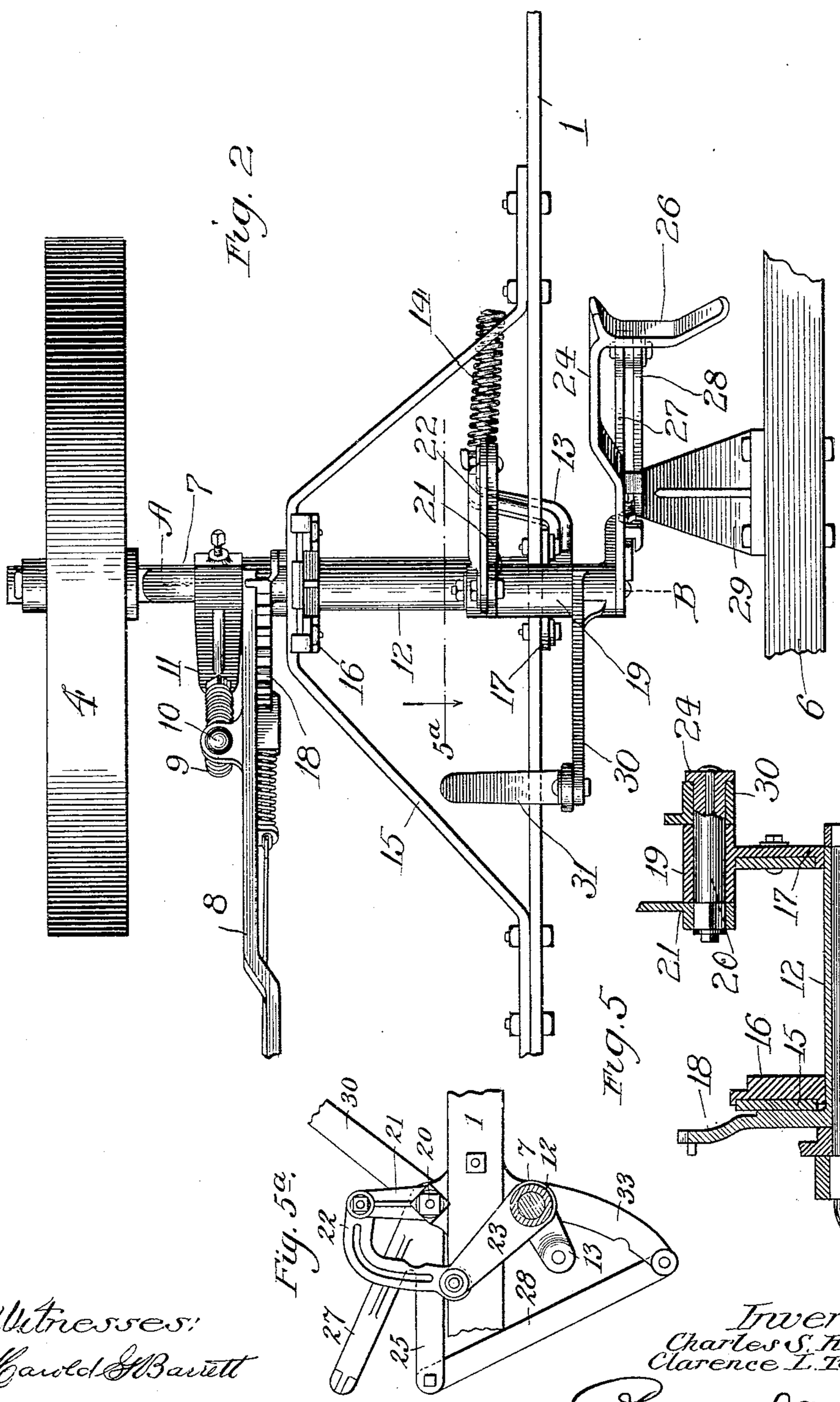

Fig. 5.

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Fig. 3.

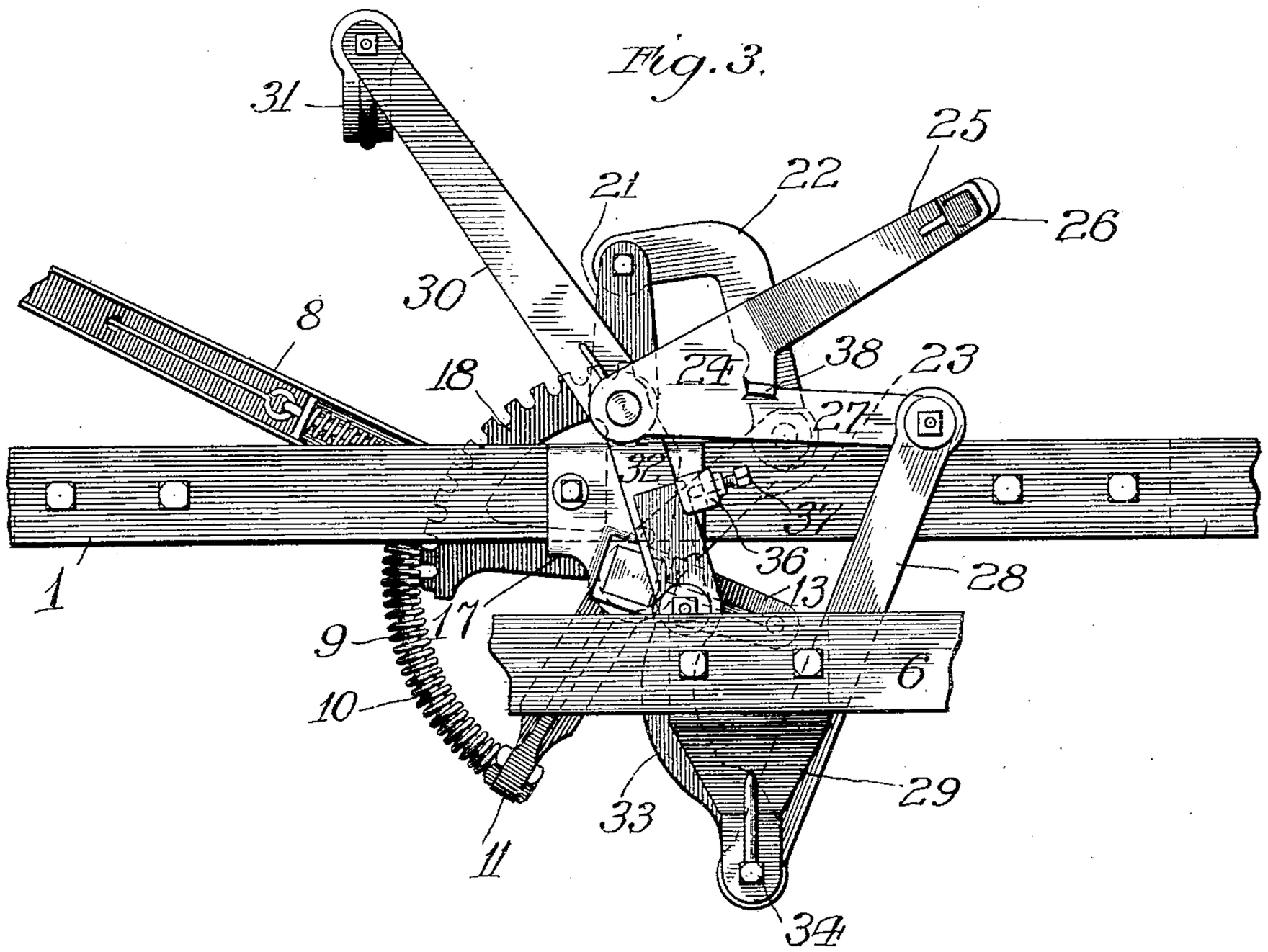
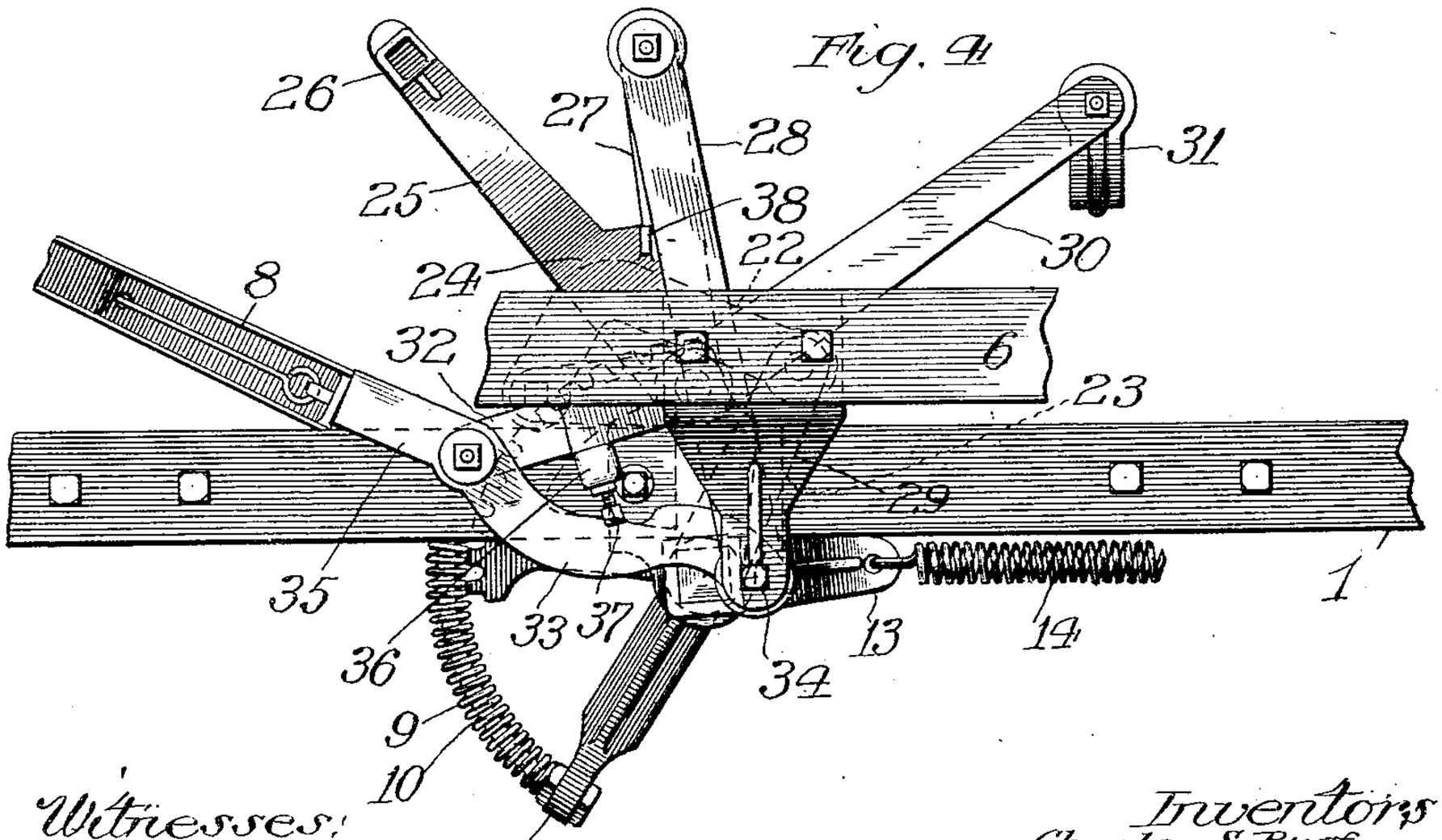


Fig. 4.



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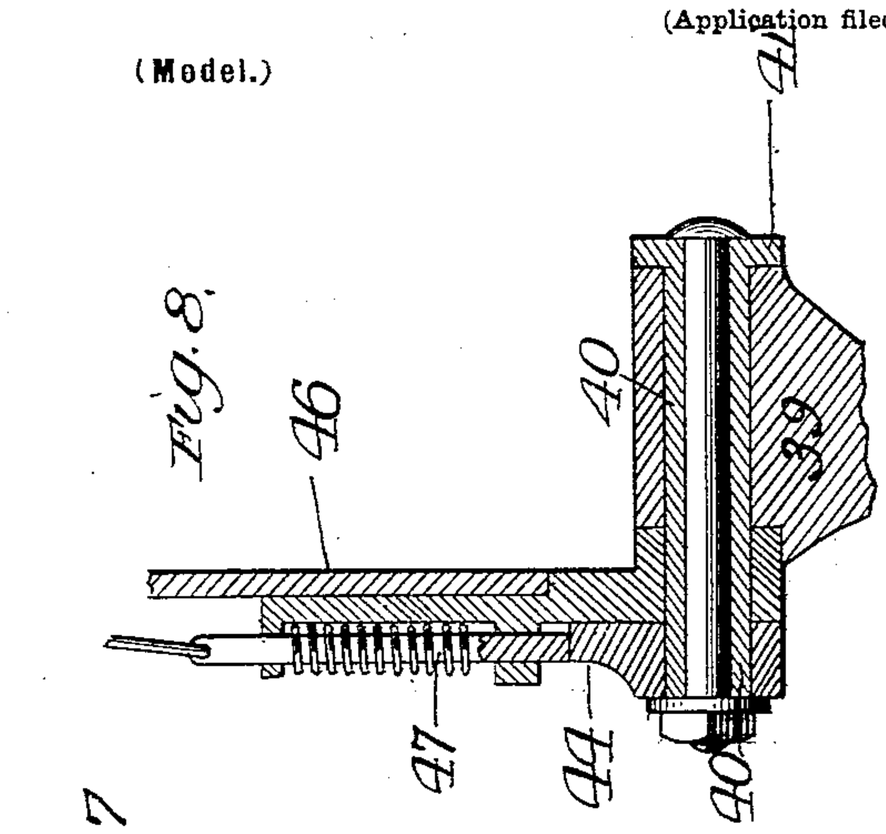

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UNITED STATES PATENT OFFICE.

CHARLES S. RUEF AND CLARENCE L. TOMLINSON, OF DIXON, ILLINOIS, ASSIGNORS TO GRAND DETOUR PLOW COMPANY, OF DIXON, ILLINOIS, A CORPORATION OF ILLINOIS.

RIDING-PLOW.

SPECIFICATION forming part of Letters Patent No. 704,274, dated July 8, 1902.

Application filed July 15, 1901. Serial No. 68,403. (Model.)

To all whom it may concern:

Be it known that we, CHARLES S. RUEF and CLARENCE L. TOMLINSON, residing at Dixon, Lee county, Illinois, have invented certain new and useful Improvements in Riding-Plows, of which the following is a specification.

Our invention relates to improvements in what are commonly known as "riding-plows;" and the object thereof is to provide novel and efficient means for both raising and lowering the plow proper by means of the feet, thus leaving the hands of the driver free for driving or for other purposes.

A second feature of our invention pertains to a hand lifting-lever coöperating with the plow proper for the purpose of raising or lowering the same and arranged to be manipulated independently of or in conjunction with the said foot-actuated mechanism.

The advantageous features of construction and operation of our improvements will be readily apparent from the description hereinafter given.

In the drawings, Figure 1 is an elevation of a riding-plow embodying our invention and showing the plow proper in substantially lowered position; Fig. 2, a plan view of those parts of the riding-plow in which our invention resides; Fig. 3, an elevation of the foot-actuated mechanism or devices for raising and lowering the plow and illustrating the relative position of the various parts when the plow is lowered, this figure being on a somewhat larger scale as compared with Fig. 1; Fig. 4, a view similar to Fig. 3, except that the various parts are shown with the plow in raised position; Fig. 5, a section on line A B of Fig. 2. Fig. 5ª is a sectional elevation on the line 5ª of Fig. 2, showing particularly the connections 21, 22, and 23; Fig. 6, an elevation of the hand lifting device with the lever thereof in disengaged position; Fig. 7, an elevation of the hand lifting device, but with the plow-beam and bracket of said device in section; and Fig. 8, a section on the line C D of Fig. 6, except that the lever has been put into engagement with the notched arm.

The riding-plow proper may be of suitable construction, and, as herein shown, the same comprises a main frame 1, the two furrow-wheels 2 and 3, the land-wheel 4, and a plow 5 and its beam 6, supported in the main frame in the usual and well-known way. The land-wheel is mounted at the lower end of an axle 7, which has a substantially vertical portion and a substantially horizontal portion. A suitable leveling-lever 8 is pivoted on the horizontal portion of this axle, and a yielding connection between it and such axle is provided in the coiled spring 9, surrounding the curved rod 10, which is fastened at one end to the arm 11, secured to the axle and which is arranged to pass loosely through the said leveling-lever, as will be readily apparent from an inspection of Fig. 1. The horizontal portion of the axle extends longitudinally through a sleeve 12 and carries at its inner end toward the plow-beam an arm 13, to which the spring 14 is connected, against the tension of which spring the adjustments of the land-wheel are obtained. This sleeve is arranged to rock in the plow-frame, and to this end the main frame has an auxiliary frame composed of the bent strip or bar 15, extending laterally in a direction toward the land-wheel. Secured to these frames are bearing-brackets 16 and 17, having bearings by which the sleeve is received and in which it is adapted to rock or partially rotate. The sleeve has a sector 18, with which the leveling-lever is adapted to coöperate in the well-known way.

The bearing-bracket 17, which is attached to the main frame, is provided at a point above such frame with a journal or bearing 19 to receive the short shaft 20. Upon one end of the shaft is secured a crank-arm 21, which is connected by means of the bent link or arm 22 to an arm 23, forming a part of or secured to the sleeve 12. The other end of the shaft 20 carries a lever 24, which will for convenience be termed the "lowering-lever," because it is more particularly concerned in the lowering operation of the plow. In the present instance this lowering-lever is secured at its lower end to the shaft 20, while its upper end is forked, the fork or arm 25 of which has a footpiece 26. The other fork or arm 27 is pivotally connected to a link 28,

whose lower end is in turn pivotally connected to a bracket 29, which is fastened to the plow-beam 6, as clearly illustrated in Fig. 2. The forward and backward movements of the lowering-lever are communicated through the various parts above described to the plow-beam bracket, so as to raise and lower the latter in a manner which will be hereinafter more particularly described when the raising and lowering operations are explained.

A lever, which will be termed the "raising-lever," is pivoted or loosely mounted intermediate of its length on the shaft 20, its upper or longer arm 30 carrying at its outer end a pivoted footpiece or stirrup 31. The shorter arm 32 of this raising-lever is pivoted upon a connecting bar or link 33, whose forward end is connected to the plow-beam bracket 29 in the same manner and upon the same pin or rod 34 as the link 28. As clearly shown in Fig. 4, the arm 32 is pivoted to the link 33 intermediate of the length of the latter, thereby leaving a short arm 35 projecting rearwardly. The lower edge of the arm 32 has a projecting lug 36, provided with a set or adjusting screw 37. This lug forms an abutment or stop for the arm 35 in the lowering operation. The set-screw is adapted to regulate the limit of movement of such arm 35 for a purpose hereinafter explained. The lever 24 is also provided with a stop 38, against which the link 28 will strike, as shown in Fig. 4.

Starting with the parts in the position shown in Fig. 3, which is the lowered position, the operation of raising the plow will now be explained. In the lowered position the upper end of the raising-lever and its stirrup is rearward toward the driver, while the lowering-lever is positioned forward. The driver having his feet on the respective levers now forces or shifts the raising-lever forward and permits the lowering-lever to move backward, whereupon in case it is desired to lift the plow wholly from the ground the parts assume the position shown in Fig. 4, the link 28 coming to rest against the stop 38 on the lever 24. The raising-lever has thus carried the plow-beam bracket, and consequently the plow, upwardly, and at the same time the arm 21 will move the link 22 until the pivotal point at the rear end of such link is below the pivotal point at the forward end thereof, whereby said parts will be locked in position, but not against the exercise of positive force by the driver. The lowering-lever is now in its rearward position with the link 28 in substantially vertical position and limited in its movement by the stop 38. Whether or not the driver keeps his feet on the levers the parts will remain in said raised position by virtue of the particular construction and operation of the parts 21, 22, and 23, which thus constitute locking mechanism. Now when it is desired to lower the plow the lowering-lever is forced forward and the raising-lever permitted to move backward, whereupon the plow-beam bracket, and consequently the plow, will be lowered. The link 33 assumes a substantially vertical position with its arm 35 carried beyond the center and abutting against the stop or set-screw 37, so that the parts are locked in lowered position, but not against positive force due either to the driver or to some unusual obstruction. The strength of the lock—that is, the amount of force necessary to unlock the mechanism—may be varied by the set-screw, which permits a passing of the center to a more or less degree accordingly as the set-screw is adjusted in or out. In this way the amount of resistance offered by the plow to any obstruction or even to the driver may be varied at will. By reason of the pivoting of the stirrup 31 on the outer or upper end of the raising-lever means are provided for the proper actuation of such lever by the foot of the operator. This stirrup is more particularly useful on the backward stroke of the raising-lever, when a substantial downward thrust on the stirrup will bring the raising-lever to its limit of stroke and cause it to be locked in such position. Were it not for the provision of this stirrup it would be necessary for the driver to push directly rearwardly on the footpiece, which would be an inconvenient and difficult operation. While only one of the levers is provided with a pivoted stirrup, because it is more particularly useful in connection therewith, yet it is obvious that such a stirrup may be applied to the other lever as well. In the raising and lowering operations the sleeve 12 has a slight rocking or oscillatory movement, which is communicated through the sector 18 to the land-wheel axle and to the land-wheel, so that the land-wheel axle partakes slightly of said movement, with the result that the machine is leveled to some degree simultaneously with the raising and lowering of the plow. The hand-lever 8 is, however, a "leveling-lever," and as this name implies and as a matter of fact its function is solely to level the machine and not to raise or lower the plow, which latter functions are performed either by the foot-actuated devices or by the hand-lever 46, or by both. The hand-lever 8, therefore, has no effect upon the raising and lowering of the plow with respect to the frame.

While the various parts hereinbefore described in detail serve to accomplish the purposes and objects hereinbefore made apparent, yet it is obvious that mechanical changes may be made in the shape and arrangement of the various parts without departing from the spirit and scope of our invention and claims.

In addition to the foot-actuated raising and lowering mechanism hereinbefore described the machine may be provided with an independent hand-operating raising and lowering device which is adapted to be operated independently of or in conjunction with said

mechanism. In the present instance such lever device comprises a bracket 39, secured in any suitable manner to the sulky-frame and having bearings for a transverse shaft 40, on one of whose ends is secured a forwardly-projecting arm 41, pivotally connected at its outer end with a lifting-link 42, which projects downwardly and is pivotally connected at its lower end to a bracket 43, secured to the plow-beam. To the other end of the shaft 40 is secured an arm or projection 44, provided with a vertical notch 45. Loosely pivoted or mounted upon the shaft 40 is the hand lifting-lever 46, provided with a spring-pressed plunger 47 and the thumb-latch 48, connected thereto. The bracket 39 is provided with projections or stops 49 and 50, on which this lifting-lever may rest or be supported when it is in the position of disengagement from the parts with which it is associated at the will of the driver. When this lifting-lever is in the position shown in the drawings—that is, in its position of disengagement—the foot-actuated raising and lowering mechanism operates, as before, for the purpose of raising and lowering the plow. However, when it is desired to work the hand lifting-lever independently of or in conjunction with said foot-actuated mechanism the plunger 47 is caused to engage in notch 45, whereupon by shifting the hand lifting-lever forwardly or backwardly the plow will be raised or lowered by reason of the connections between the shaft 40 and the plow-beam, as hereinbefore stated. It is obvious that the hand lifting-lever is adapted to do the entire work of raising and lowering the plow and also that it may be used to assist the foot-actuated mechanism as may be desired or found necessary by the driver.

Referring to the foot-actuated devices hereinbefore described, complete strokes of the levers operate to raise or lower the plow to its full extent; but it is evident that the driver may by partial strokes raise or lower the plow to any predetermined level and maintain it in such position by his feet.

We claim—

1. In a plow, the combination of a plow, its frame, and means for raising the plow comprising a lever pivoted intermediate of its length upon the frame and a link pivotally connected respectively to the lower end of said lever and to said plow; substantially as described.

2. In a plow, the combination of a plow, its frame and means for raising the plow, comprising a lever pivoted intermediate of its length upon the frame and a link pivotally connected at its lower end to the plow and intermediate of its length to the lever; substantially as described.

3. In a plow, the combination of a plow, its frame and means for raising the plow comprising a lever pivoted intermediate of its length upon the frame, a link pivotally connected at its lower end to the plow and intermediate of its length to the lever, and an adjustable stop arranged on said lever and adapted to be contacted by the upper or free end of said link; substantially as described.

4. In a plow, the combination of a plow, its frame, a raising-lever pivoted intermediate of its length to said frame, a link pivoted at a point intermediate of its length to the lower end of said raising-lever and at its lower end to the plow, a lowering-lever pivoted to said frame and a link connection pivoted at one end to said lowering-lever and at its other end to the plow; substantially as described.

5. In a plow, the combination of a plow, its frame, a raising-lever pivoted to said frame, a link pivotally connected to the raising-lever and the plow, a lowering-lever also pivoted to said frame and a second link pivotally connected to the lowering-lever and to the plow on the same pivotal axis as the first link; substantially as described.

6. In a plow, the combination of a plow, its frame, a raising-lever and lowering-lever pivoted on said frame on a common axis, a link pivotally connected to the raising-lever and the plow, and a second link pivotally connected to the lowering-lever and to the plow, on the same pivotal axis as the first link; substantially as described.

7. In a plow, the combination of a plow, its frame, a lowering-lever pivoted on said frame and having two forks, one of which has a footpiece, a link connecting the other of said forks to the plow and a stop arranged on said lever to limit the movement of said link in one direction; substantially as described.

8. In a plow, the combination, with the plow and a frame, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between the lever and plow, an arm 21 on the shaft, an arm 23, a connection between said arms and a member carrying arm 23 and arranged to have a slight oscillatory movement in the frame; substantially as described.

9. In a riding-plow, the combination, with the plow and a frame, of means for lowering the plow comprising a foot-actuated lever, having a shaft journaled on the frame, a connection between the lever and plow, an arm on said shaft, a sleeve journaled in said frame, an arm on such sleeve, a connection between said arms and means for rotarily adjusting the position of the sleeve; substantially as described.

10. In a riding-plow, the combination with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever, having a shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve, substantially as described.

11. In a riding-plow, the combination with

the plow, a frame and a land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve, comprising a sector and adjusting-lever coöperating therewith; substantially as described.

12. In a riding-plow, the combination with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between said lever and plow, and an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve, comprising a sector on the sleeve and an adjusting-lever coöperating with said sector; substantially as described.

13. In a riding-plow, the combination with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve comprising a sector on the sleeve and an adjusting-lever loosely mounted on said axle and coöperating with said sector; substantially as described.

14. In a riding-plow, the combination, with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having the shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, means for rotarily adjusting the position of the sleeve comprising a sector on the sleeve, an adjusting-lever loosely mounted on said axle and coöperating with said sector, and a yielding connection between the lever and axle; substantially as described.

15. In a riding-plow, the combination, with the plow and a frame, of means for raising and lowering the plow comprising a foot-actuated lever having a shaft journaled in the frame, a connection between the lever and plow, an arm on said shaft, a sleeve journaled in said frame, a second arm on such sleeve and a bent link connecting said arms and permitting a locking of said arms and lever; substantially as described.

16. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a foot-actuated lever pivoted in the frame, a connection between the upper end of such lever and the plow and a stop arranged on the lever and contacted by the link when the lever has substantially completed its upward movement; substantially as described.

17. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a foot-actuated lever pivoted in the frame, a connection pivotally connected at its upper end to the upper end of the lever and at its lower end to the plow, said connection having a relative swinging movement over the face or side of the lever, and a projection arranged on the side of the lever in the path of the connection to limit its swing; substantially as described.

18. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a shaft 20 journaled in the frame, a lever 24 connected at its lower end to the shaft, a bracket 29 on the plow, a link 28 pivotally secured at its lower end to the bracket and at its upper end to the upper or free end of said lever, and a projection on the side of the lever against which the link comes to rest in the upward position of the parts; substantially as described.

19. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a shaft 20 journaled in the frame, a lever 24 pivoted at its lower end and having two upwardly-projecting forks, a foot-piece on one fork, a link connected at one end to the other fork and extending downwardly below the shaft and pivotally connected to the plow, and a projection on the side of the lever against which the link comes to rest in the upward position of the parts; substantially as described.

20. In a riding-plow, the combination of a plow, its frame, and means for raising and lowering the plow comprising a lowering-lever pivoted in the frame, a link between said lever and plow, a raising-lever pivoted intermediate of its length in the frame, and a second link between one arm of the raising-lever and plow; substantially as described.

21. In a riding-plow, the combination of a plow, its frame, and means for raising and lowering the plow comprising a shaft mounted in the frame, a lowering-lever on said shaft, a link between said lever and plow, a raising-lever pivoted on said shaft, and a second link between the plow and raising-lever; substantially as described.

22. In a riding-plow, the combination of a plow, its frame and means for raising and lowering the plow, comprising a shaft mounted in the frame, a lowering-lever on said shaft, a link between said lever and plow, a raising-lever pivoted intermediate of its length on said shaft and a second link between one of the arms of the raising-lever and the plow; substantially as described.

23. In a riding-plow, the combination of a plow, its frame, and means for raising and lowering the plow, comprising a lowering-

lever pivoted in the frame, a link between said lever and plow, a raising-lever also pivoted in the frame and a link between the raising-lever and the plow, and means for locking the raising-lever and its link; substantially as described.

24. In a riding-plow, the combination, of a plow, its frame, and a foot-actuated raising-lever device comprising a lever pivoted intermediate of its length on the frame, a stop on said lever, a link pivoted intermediate of its length to said lever and at its lower end to the plow, the upper or free end of said link being adapted to contact said stop; substantially as described.

25. In a riding-plow, the combination of a plow, its frame, and a foot-actuated raising-lever device comprising a lever pivoted intermediate of its length on the frame, an adjustable stop on said lever, a link pivoted intermediate of its length to said lever and at its lower end to the plow, the upper or free end of said link being adapted to contact said stop; substantially as described.

26. In a riding-plow, the combination of a plow, its frame and a foot-actuated raising-lever device comprising a lever pivoted intermediate of its length on the frame, a stop on said lever comprising a lug and a set-screw therein, a link pivoted intermediate of its length to said lever and at its lower end to the plow, the upper or free end of said link being adapted to contact said stop; substantially as described.

27. In a riding-plow, the combination of a plow, its frame, and means for lowering the plow comprising a lever pivoted at one end to the frame and having its other end forked, one of said forks having a footpiece, and a link connection between the other of said forks and the plow; substantially as described.

28. In a riding-plow, the combination of a plow and its beam, the main frame 1, the auxiliary frame 15, a sleeve 12 journaled in said frames, a shaft 20 journaled in the main frame, a lever 24 mounted on said shaft, and having the forks 25 and 27, a footpiece 26 on the fork 25, a plow-beam bracket 29 and a link 28 between the fork 27 and the bracket; substantially as described.

29. In a riding-plow, the combination of a plow and its beam, the main frame 1, an auxiliary frame 15, a sleeve 12 journaled in said frames, an arm 23 on the sleeve, a shaft 20 in the main frame, an arm 21 on one end of the shaft, a link 22 between said arms, a lever 24 secured at its lower end to the shaft and having forks 25 and 27, a footpiece 26 on one fork, a bracket 29 secured to the plow-beam, and a link 28 between the fork 27 and the bracket; substantially as described.

30. In a riding-plow, the combination of a plow and its beam, the main frame, a shaft 20 in said frame, a lowering-lever 24 on said shaft, a raising-lever pivoted intermediate of its length on said shaft and independently movable thereon, a bracket 29 on the plow-beam, a link 28 between the lever 24 and the bracket, a link 33 pivoted at one end to the bracket and intermediate of its length to one end of the raising-lever, said link having a free end 35, a lug 36 on said raising-lever and a set-screw 37 adapted to be contacted by the said end of the link 33; substantially as described.

31. In a riding-plow, the combination of a plow, foot-actuated mechanism for raising or lowering the plow comprising an actuating-lever, and operative connections between it and the plow, and a footpiece loosely pivoted on said lever; substantially as described.

32. In a riding-plow, the combination of a plow, foot-actuated mechanism for raising or lowering the plow, comprising an actuating-lever and operative connections between it and the plow, and a stirrup loosely pivoted on said lever; substantially as described.

33. In a riding-plow, the combination of a plow, foot-actuated mechanism for raising or lowering the plow comprising an actuating-lever and operative connections between it and the plow and a stirrup loosely pivoted and arranged to move independently on said lever; substantially as described.

34. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a shaft in said frame, a pivoted lever having a plunger, an arm on the shaft and having a notch adapted to be engaged by said plunger, rests for the forward and rearward positions of the lever and an operative connection between said shaft and the plow; substantially as described.

35. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a shaft in said frame, a pivoted lever having a plunger, an arm on the shaft and having a notch adapted to be engaged by said plunger, a second arm secured to said shaft, a bracket secured to the plow and a link connection between such second arm and the said plow-bracket; substantially as described.

36. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a bracket arranged on the frame, having the two stops or rests 49 and 50, a cross-shaft therein, operative connection between said shaft and plow and a hand lifting-lever adapted to be put into and out of coöperative relation with the shaft and to rest on either one of such rests or stops; substantially as described.

37. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a bracket arranged on the frame, a cross-shaft thereon, operative connection between said shaft and plow, comprising a horizontal arm 41 on said shaft, a bracket 43 on the plow-beam, and a link pivotally connected to the arm 41 and bracket 43 respectively, a notched arm on said shaft and a hand lifting-lever having a

spring-pressed plunger adapted to engage and be disengaged from said notched arm; substantially as described.

38. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow, comprising a bracket arranged on the frame and having a pair of stops, a shaft in said bracket, operative connection between said shaft and plow, and a hand lifting-lever loosely pivoted on the shaft and adapted to coöperate with the latter, said lever being arranged to rest against one or the other of the stops; substantially as described.

39. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, and a hand-lever adapted to engage said sleeve and having a yielding connection with said axle; substantially as described.

40. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, and a hand-lever pivoted on said axle and having a yielding connection therewith; substantially as described.

41. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, a hand-lever pivoted on said axle and a spring interposed between the lever and the axle; substantially as described.

42. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, a hand-lever pivoted on said axle, an arm projecting from said axle and a spring connected at its ends to the lever and to the arm to form a yielding operative connection between the axle and lever; substantially as described.

43. In a wheeled plow, the combination of a frame, a plow-beam supported thereby, a movable sleeve in such frame and having operative connection with the plow-beam, a toothed segment on such sleeve, a land-wheel having an axle received by such sleeve, a hand-lever pivoted on said axle and adapted to coöperate with said segment and a yielding operating connection between the lever and axle; substantially as described.

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