(No Model.)

3 Sheets—Sheet 1.

A. PIRCH.

REVERSIBLE PLOW.

No. 499,853. Patented June 20, 1893.

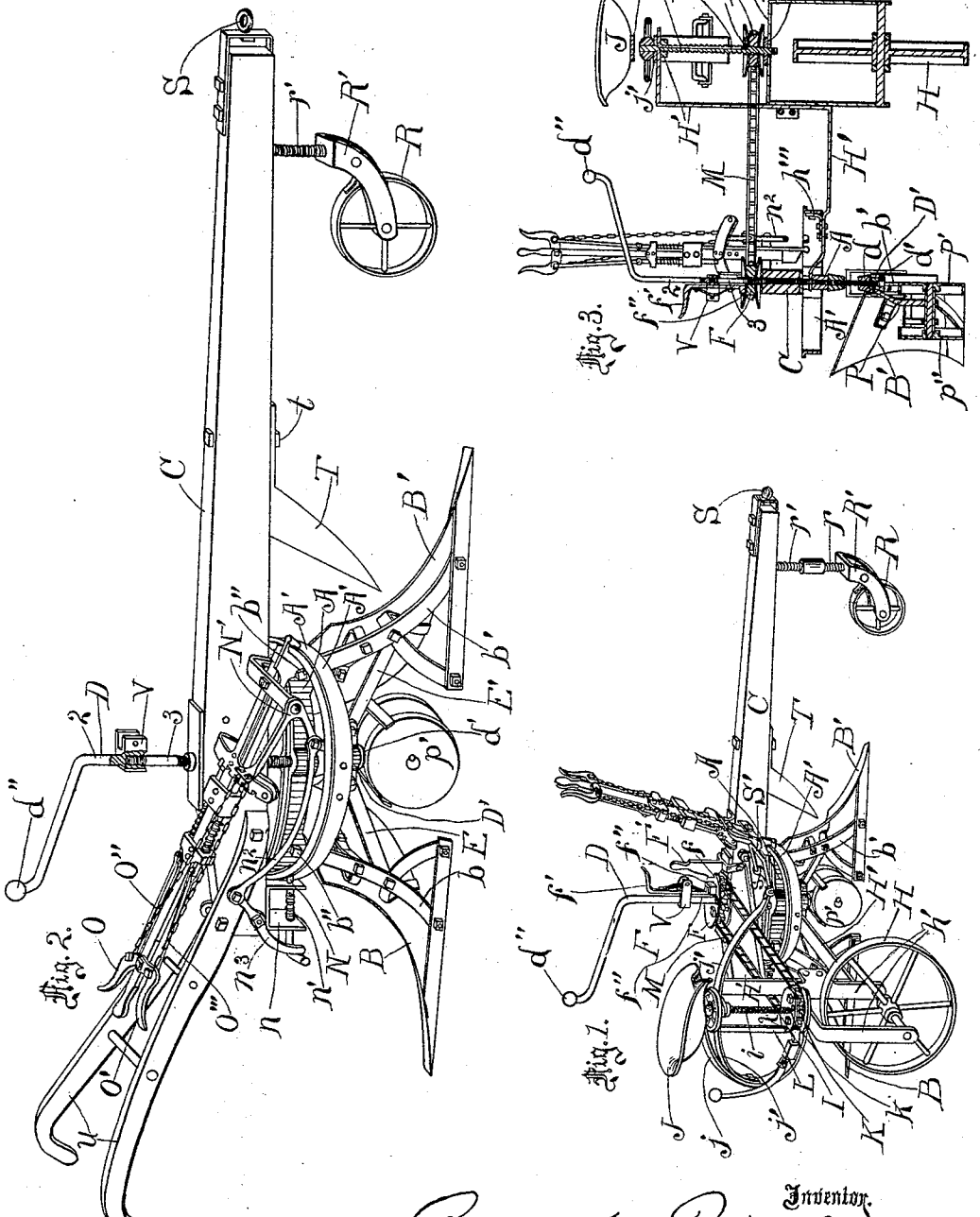

Fig. 2.

Fig. 3.

Fig. 1.

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(No Model.)

3 Sheets—Sheet 2.

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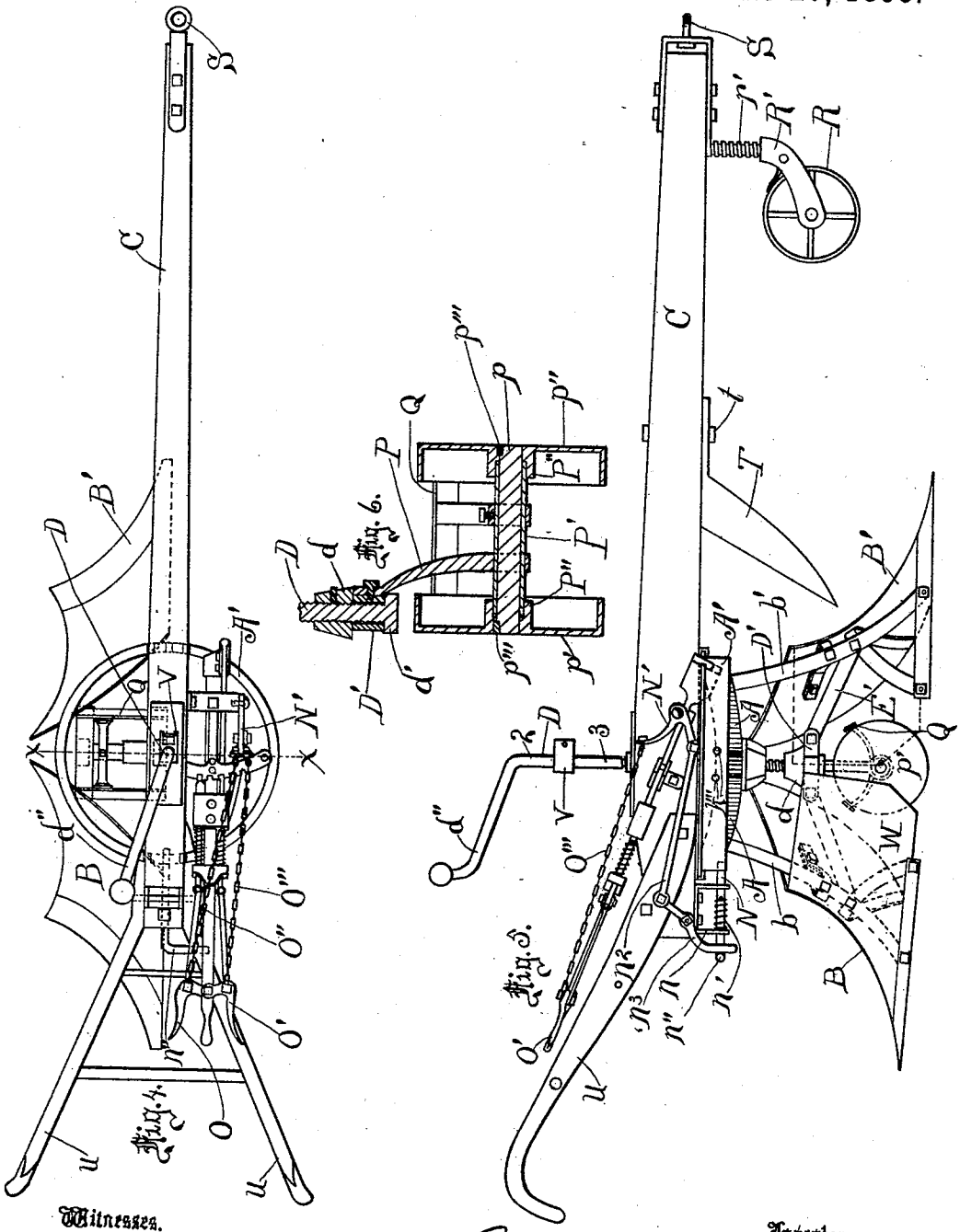

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(No Model.)

3 Sheets—Sheet 3.

A. PIRCH.

REVERSIBLE PLOW.

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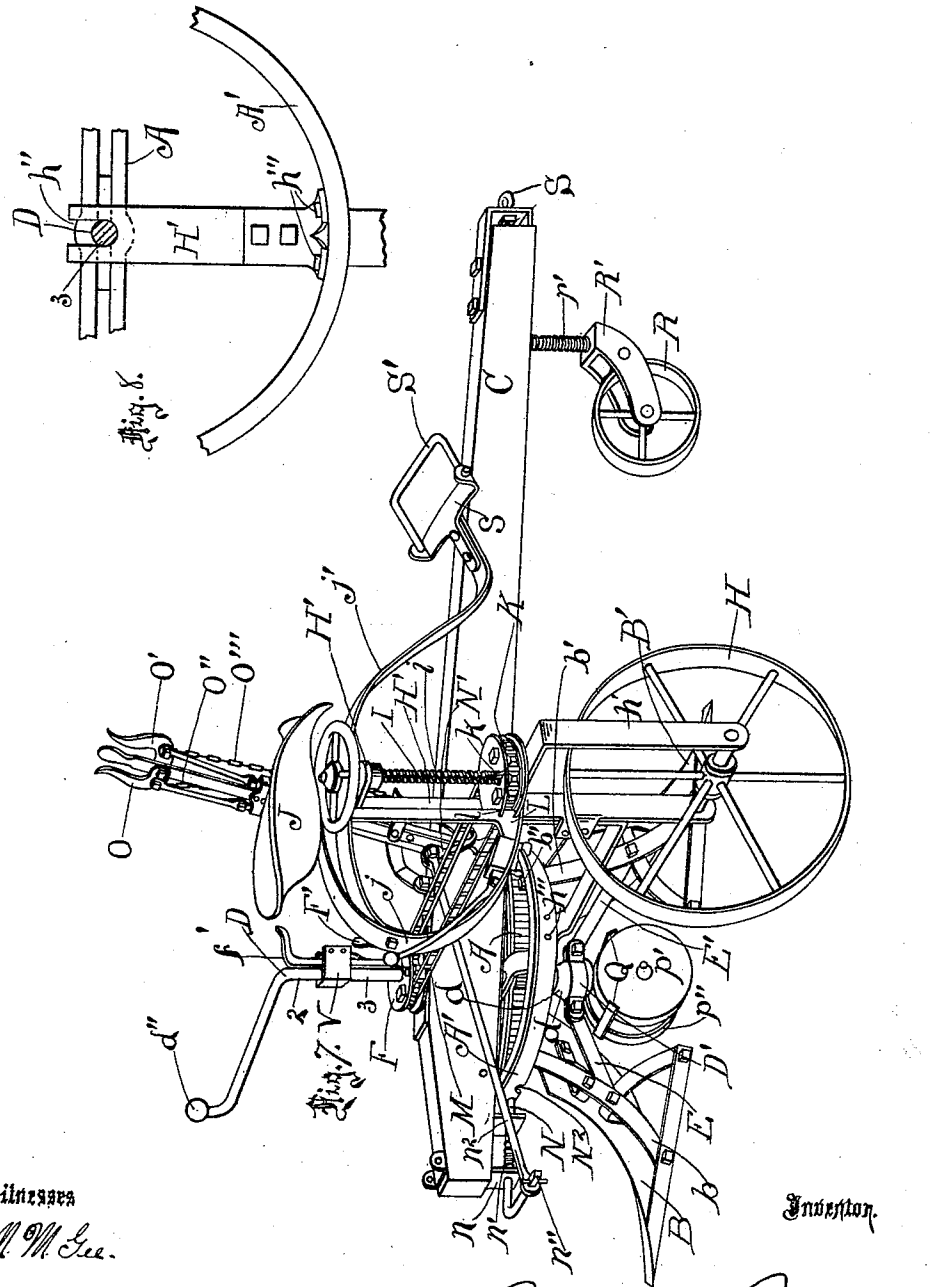

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UNITED STATES PATENT OFFICE.

AUGUST PIRCH, OF LOS ANGELES, CALIFORNIA.

REVERSIBLE PLOW.

SPECIFICATION forming part of Letters Patent No. 499,853, dated June 20, 1893.

Application filed January 11, 1893. Serial No. 457,992. (No model.)

To all whom it may concern:

Be it known that I, AUGUST PIRCH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Reversible Side-Hill and Ditching Plows, of which the following is a specification.

My invention more especially relates to improvements upon a certain reversible plow described and claimed in United States Letters Patent No. 477,912, issued to me June 28, 1892.

My invention relates to improvements whereby the operation of the crank arm to raise and lower the points of the plow will also raise and lower the sulky wheel with relation to the plow so that one operation raises and lowers the sulky wheel and the plow points.

My invention also relates to certain improvements whereby the weight of the plow is supported upon bearing wheels to lighten the draft of the plow and whereby all wear upon the axle of the wheel by reason of dirt getting into the bearing is avoided.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective front view of my improved plow with the sulky attachment in place. Fig. 2 is a perspective view of my improved plow, the sulky attachment being removed and not shown. Fig. 3 is a sectional view on line x—x Fig. 4 looking from the rear, and not cutting the crank and screw stem D. Fig. 4 is a plan view of Fig. 2. Fig. 5 is a side elevation of Fig. 2. Fig. 6 is a vertical longitudinal section of the bearing wheels and their supporting axle showing the means for attaching the same to the plow. Fig. 7 is a perspective rear view of my improved plow with sulky attachment in place. Fig. 8 is a fragmentary view of the sulky arm and portions of the plow, showing the manner of attaching such arm to the truss.

A is a truss and A′ is a circular beam guide attached to such truss.

B and B′ are right and left plows pivotally connected with the beam C through suitable means; that is to say, as shown they respectively have their standards b, b', pivotally attached to the truss A by the pivot bolts b'', and such truss is pivotally connected with the beam through the medium of the guide A′ and the plow adjusting screw stem D. The beam C is thus pivoted to the truss by the plow adjusting screw stem D which passes through the beam and is arranged to screw up and down with relation to the plows (being screwed through the truss) and is provided with a collar D′ journaled upon the screw.

d is a thrust bearing comprising a nut fixed upon the screw above the collar to receive the upward thrust of such collar.

d' is a bearing shoulder provided at the lower end of the screw stem to receive the downward thrust of the collar.

E E′ are toggle braces or arms connecting the plow standards b, b' respectively, with the collars D′ to cause the screw in its downward movement to force the lower or free ends of the standard apart, and, in its upward movement, to draw such ends toward each other, thus to raise and lower the points of the plows with relation to the plow beam when the screw stem D is screwed up or down through the truss A.

F is a sprocket wheel arranged upon the top of the plow beam and journaled upon the screw stem D.

F′ is a catch pivotally secured to the plow beam and arranged to catch in a notch f in the sprocket wheel F, to connect and disconnect such sprocket wheel and beam.

f' is a suitable catch arranged upon the screw stem D and adapted to enter a socket f'' in the sprocket wheel F to connect and disconnect such sprocket wheel and screw stem D.

H is the sulky wheel arranged at one side of the plow and attached to the truss A by means of connecting arm H′.

I is a screw stem provided with a groove i extending along its length to receive a spline. The stem I is screwed through the connecting arm H′ and journaled to the sulky wheel bracket h' and arranged and adapted to screw through such arm to raise and lower the sulky wheel H with relation thereto.

J is a suitable seat journaled upon the screw stem I by intermediate means such as the seat bow j and the foot rest j' and is adapted to partially revolve.

K is a sprocket wheel arranged upon the screw stem I and provided with a spline *k*, arranged to slide in the groove *i*.

L is a catch arranged to catch into a notch *l* in the sprocket wheel *k* to connect and disconnect the sprocket wheel K and seat.

M is a sprocket chain connecting the sprocket wheel K with the plow beam sprocket wheel F.

In my former construction two separate operations were required to adjust the sulky wheel and the points of the plow. By the present construction in which the sprocket wheel F is journaled upon the beam screw stem D and is detachably connected with the beam and the stem D by the catches F′ and *f*′ so that the operator can connect the sprocket wheel with the plow beam or with the beam screw stem as desired, and in which the catch L is arranged to detachably connect the sprocket wheel K with the seat, I am able to disconnect the sprocket wheel K and the seat, to disconnect the sprocket wheel F and the plow beam and connect the sprocket wheel F with the screw stem D, so that when the screw stem D is turned by means of the crank *d*″ to force the free ends of the standards *b* and *b*′ from or toward each other to raise and lower the points of the plows, the screw stem I is at the same time operated through the medium of the sprocket chain M to (without turning the plow beam or the seat) raise and lower the wheel H with relation to the connecting arm H′ and the plow.

In my previous invention the plow beam is attached to the beam guide A′ at only one point to prevent lateral movement. In practice it is found desirable to lock the beam to the guide upon opposite sides of the beam guide to insure sufficient rigidity of the beam with relation to the plow. To accomplish this end I have provided a rear guide locking device which consists in a bolt N passed through suitable bolt guides *n* fixed to the plow beam. The bolt N is connected through suitable means with one arm of a rock lever N′, which is pivoted through intermediate means to the plow beam and has its other arm attached to the ratchet levers O, O′, by means of chains O″, O‴ or other suitable means, the whole being arranged so that when the ratchet levers O, O′, are actuated to adjust the plow beam with relation to the circular beam guide, (which is fully explained in my former patent) the bolt N′ is released from the notches N^2 in the beam guide to allow the beam to be partially rotated to adjust it with relation to the beam guide; a spring *n*′ is provided to throw the bolt into the notches N^2. When the sulky wheel is removed and the handles U are attached, the beam adjusting lever must be shifted to bring the ratchet levers into convenient position to be grasped by the hand of the operator. This change necessitates the use of a supplemental lever n^3 which is pivoted to the plow beam and has one arm arranged to engage the lever arm *n*″ of the bolt N, and has its other arm attached to the actuating lever n^3.

In order to lighten the draft of the plow I provide a supporting device which is cheap and simple, and is arranged to prevent the entrance of dirt into the bearing and to prevent it from wearing. This device is illustrated in Fig. 6 and comprises the combination of an arm P which is arranged and adapted to be attached to the plow; a journal box P′, attached to such arm provided with cylindrical ends and adapted to journal an axle box *p*; such axle box arranged in the journal box and projecting from each end of such box; two supporting wheels *p*′ and *p*″ fixed respectively upon the ends of such axle by suitable means such as the set screws *p*‴ and each having an inwardly projecting hub P″ arranged to encircle the respective ends of such journal box and to journal such end between such hub and the axle. As shown the supporting arm P is attached to the collar D′, but it may be arranged to attach to some other portion of the plow; this is not of the essence of my invention however and does not require illustration. Mud scrapers Q are secured to the journal box P′ and are adapted to remove the mud from the wheels *p*′ *p*″. The plow beam is arranged with its weight sufficiently in front of the supporting wheels to cause the bearing wheels to be at the rear of the center of gravity of the plow so that no matter in which direction the beam is turned the weight of the beam will tip the plow forward and the point of the rear plow will thus always be held elevated.

The operation is as follows:—To elevate the points of the plow, the screw D is screwed downward thus forcing the collar D′ and the bearing wheels *p*′ *p*″ downward; at the same time the standards of the plows are forced outward by the braces E′ E and the points of the plows are thus forced upward so that as the plow is drawn forward it will be thrown out of the ground and the weight of the plow will rest entirely upon the bearing wheels. To force the plow into the ground the operation is reversed.

In order to adapt the plow for convenient transportation, or removal from one field to another, I provide the front beam supporting wheel R with an extension member r^3 (as shown in Fig. 1) which is arranged to screw upon the swivel screw stem *r*′ which is affixed to the plow beam and upon which is screwed the support or swivel R′ of the wheel. When it is desired to remove the plow from one field to another, the screw D is screwed downward to elevate the points of the plow and the sulky wheel H is lowered until its bottom face is on the same horizontal plane with the bottom face of the bearing wheels *p*′ *p*″; the wheel R is unscrewed from the stem *r*′, the extension member *r* is screwed upon the stem and the wheel R is then screwed upon the extension member; the plow is thus supported by

the wheel R, the plow supporting wheels p' and p'' and the sulky wheels H, and the points of the plow are elevated and will not strike the ground.

For convenient use of the plow upon side hills a swivel S is provided at the front end of the beam to allow double trees to turn to suit the inclination of the land.

S′ is an extension foot rest, pivoted to the foot rest s to allow it to be folded back so that when desired to turn the seat the foot rest will not strike the beam screw stem D.

When it is desired to raise or lower the points of the plows, without changing the elevation of the wheels H, the catches F′ and f' are operated to disengage the sprocket wheel F from the beam, and the screw stem D may then be rotated by means of a crank d'' without affecting the seat or plow points. When it is desired to raise or lower the points of the plow and to raise and lower the sulky wheel H at the same time the catch F′ is released from the sprocket wheel F and the catch f' is thrown into engagement therewith; the catch L is released from the sprocket wheel K, the crank d'' is then rotated and the sprocket wheel F rotates therewith, thus rotating the sprocket wheel K to turn the shaft I by reason of the spline k and the groove i in the screw stem, thus raising and lowering the points of the plow and raising and lowering the sulky wheel at the same time. When the plow has been adjusted to cut the desired depth of soil the catch f' is released from the sprocket wheel F and the catch F′ is thrown into engagement with the sprocket wheel to attach it to the plow beam; the catch L is also thrown into engagement with the sprocket wheel K, and when the plow beam is turned to reverse the plow, the seat is automatically turned therewith as fully described in my former patent.

T is a colter attached to the plow beam by a bolt t.

The screw stem D is made in two parts 2 and 3 which are joined to each other by a joint block V which also serves to secure the catch f' to the screw stem. The block V is fixed to the upper part, 2 of the stem. This is to allow the top of the stem, together with the crank arm d'' to be removed to allow the sprocket wheel F to be taken off of the stem without removing the entire screw from the plow. This is advantageous when the plow is changed from a sulky plow into a hand plow.

In order to facilitate the removal of the sulky arm from engagement with the truss, the inner arm is provided with a slot h'' adapted to receive the screw stem therein, and so allow the arm to be removed by simply unscrewing the bolts h''' which secure the arm H′ to the beam guide A′.

W indicates a dirt guard arranged on the land side of the plow to prevent the earth from falling into the path of the supporting wheels and also to serve as a scraper to scrape the earth from the land side of the supporting wheel. This is shown only on the rear plow in Fig. 5 being omitted from the other plow and other views for clearness of illustration.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination set forth of the truss; a beam guide fixed thereto; the right and left hand plows arranged in reverse directions and having their standards pivoted to such truss; a plow beam pivotally attached to such truss and adapted to partially revolve; a plow adjusting screw passing through such plow beam and screwing through such truss and provided at its lower end with suitable means arranged to connect the screw with the plow standards to force the free ends of such standards apart or to draw them together to raise and lower the points of the plows with relation to the plow beam; a sprocket wheel arranged upon the top of the plow beam and journaled upon such screw stem; a suitable catch arranged to connect and disconnect the sprocket wheel and beam; a suitable catch arranged to connect and disconnect such sprocket wheel and the beam screw stem; a sulky wheel arranged at one side of the plow and attached to the truss by means of a connecting arm; the sulky adjusting screw stem provided with a groove extending along its length screwed through such connecting arm and arranged to raise and lower the sulky wheel with relation to the plow; a sprocket wheel arranged upon the sulky screw stem and provided with a spline arranged in the groove in such screw stem; a suitable seat journaled upon such screw stem by intermediate means and adapted to partially revolve; a catch arranged to connect and disconnect such sprocket wheel and seat, and a sprocket chain connecting such sprocket wheel with the sprocket wheel upon the plow beam.

2. In a reversible plow, the combination set forth of a truss having a beam-guide fixed thereto; the reversely arranged right and left hand plows having their standards pivotally attached to such truss; a plow beam pivoted on such truss; the plow adjusting screw passing through such plow beam and screwing through such truss; a collar journaled upon the lower end of such screw; suitable thrust bearings arranged upon the screw stem to receive the thrust of the collar; the toggle braces connecting the collar with the plow standards and the supporting wheels arranged between the plows and attached to the collar by suitable means.

3. In a reversible plow, the combination set forth of a truss having a beam guide fixed thereto; the reversely arranged right and left hand plows having their standards pivotally attached to such truss; a plow beam pivoted on such truss; the plow adjusting screw pass-

ing through such plow beam and screwing through the truss; a collar journaled upon the lower end of such screw stem; suitable thrust bearings arranged upon the screw stem to receive the thrust of the collar; the toggle braces connecting the collar with the plow standards; the supporting wheels arranged between the plows and attached to the collar by a suitable arm; a sprocket wheel arranged upon the plow beam and journaled upon the plow adjusting screw; a catch arranged to connect and disconnect such sprocket wheel and the plow beam; a catch arranged to connect and disconnect such sprocket wheel and plow adjusting screw; a sulky wheel arranged at one side of the plow and attached to the truss by a connecting arm; a wheel adjusting screw screwed through such connecting arm and arranged to raise and lower the sulky wheel with relation to such arm and provided with a groove extending along such screw stem; a sprocket wheel arranged upon such screw stem and provided with a spline arranged in the groove of the sulky wheel adjusting screw; a suitable seat journaled upon the wheel adjusting screw; a catch arranged and adapted to connect and disconnect such sprocket wheel and seat, and a sprocket chain connecting the sprocket wheel upon the wheel adjusting screw with the sprocket wheel upon the beam.

4. A supporting device for plows comprising the combination of an arm arranged for attachment to a plow; a journal box attached to said arm and adapted to journal an axle; such axle arranged in said box and projecting from each end of such box; the wheels fixed to the axle and each having an inwardly projecting hub arranged to encircle its respective end of the journal box and to journal such end between the hub and axle.

5. The combination set forth of the plow beam; the right and left hand plows pivotally attached thereto through suitable means; the plow adjusting screw passing through the plow beam and arranged to screw up and down with relation to the plows; the collar journaled upon the lower end of the screw; the thrust bearings arranged on the screw to receive the thrust of the collar, the bearing wheels arranged between the plows; the standard connecting the bearing wheels and the collar, and the toggle braces arranged to connect the collar with the plow standards.

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