

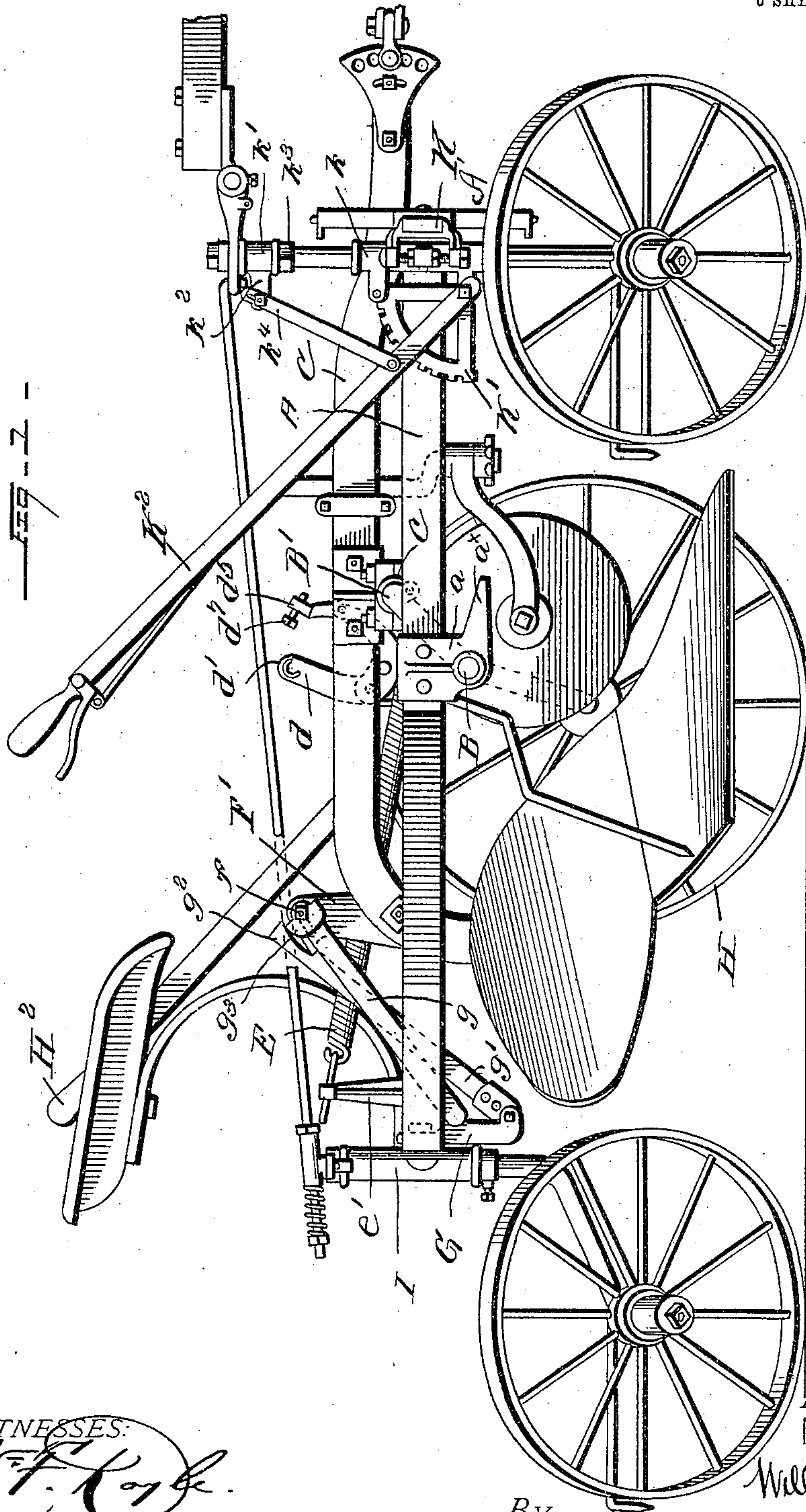
No. 816,771.

PATENTED APR. 3, 1906.

W. L. BEALL.
SULKY PLOW.

APPLICATION FILED AUG. 9, 1905.

6 SHEETS—SHEET 1.



WITNESSES:

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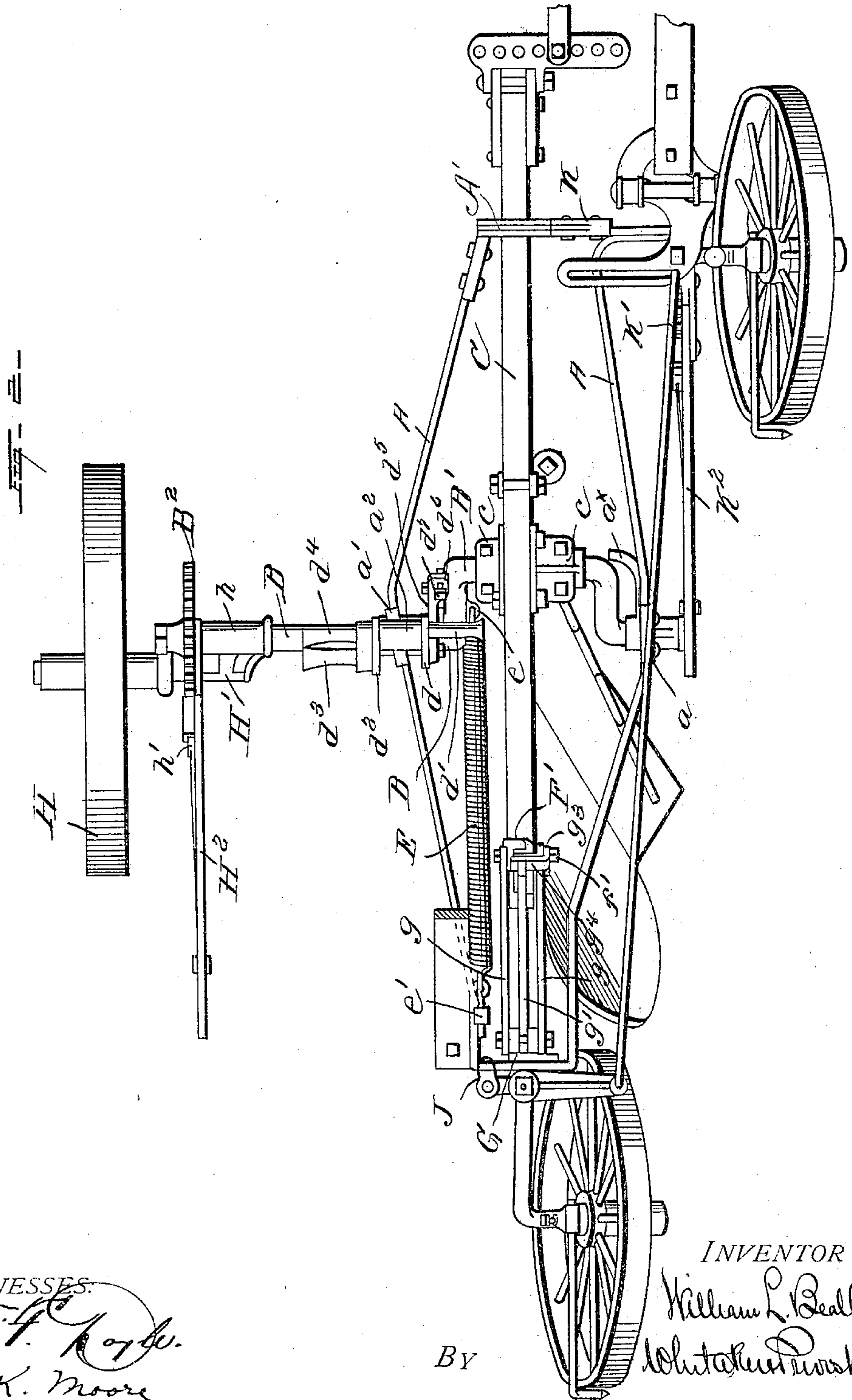
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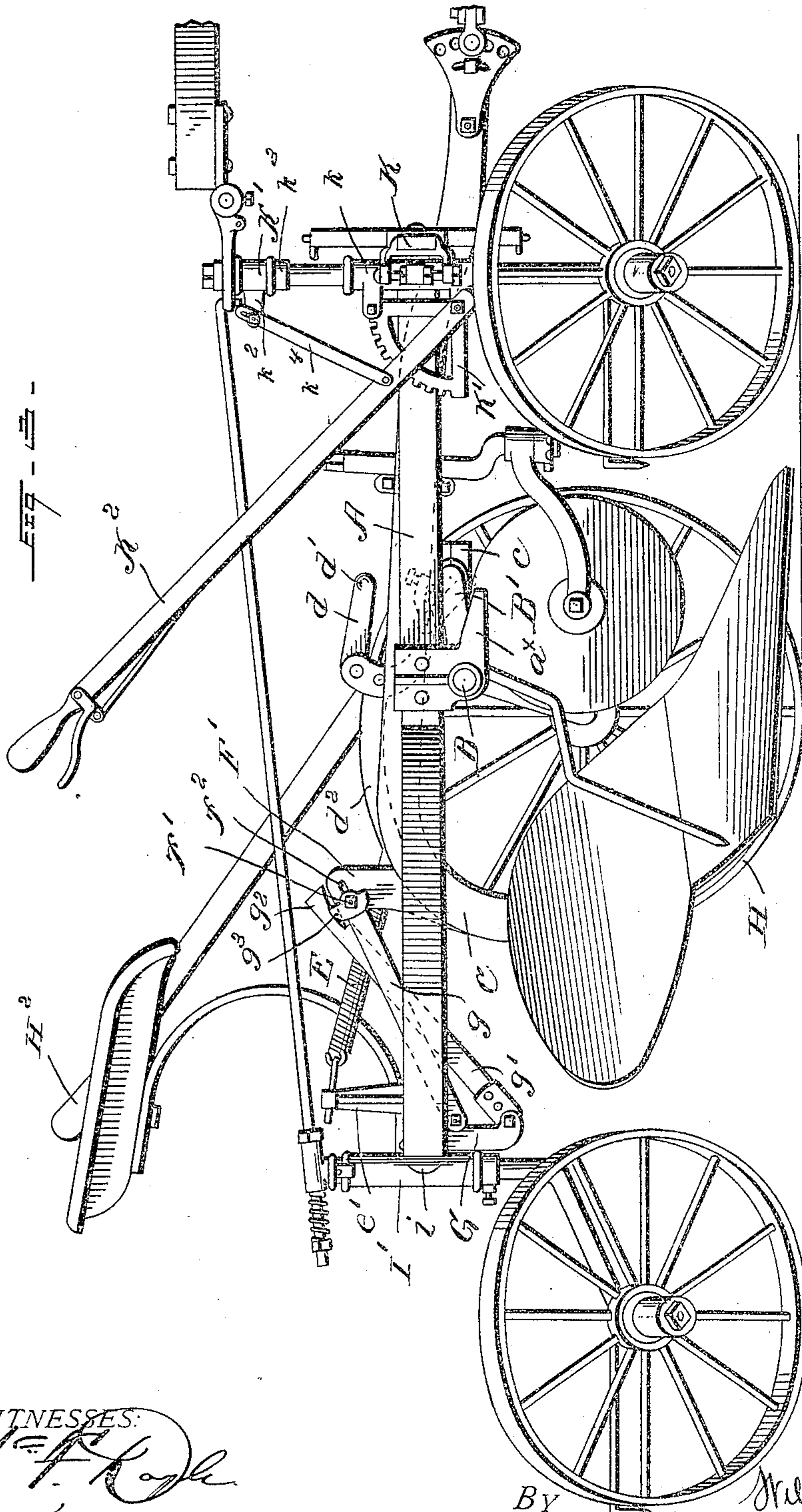
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6 SHEETS—SHEET 3.



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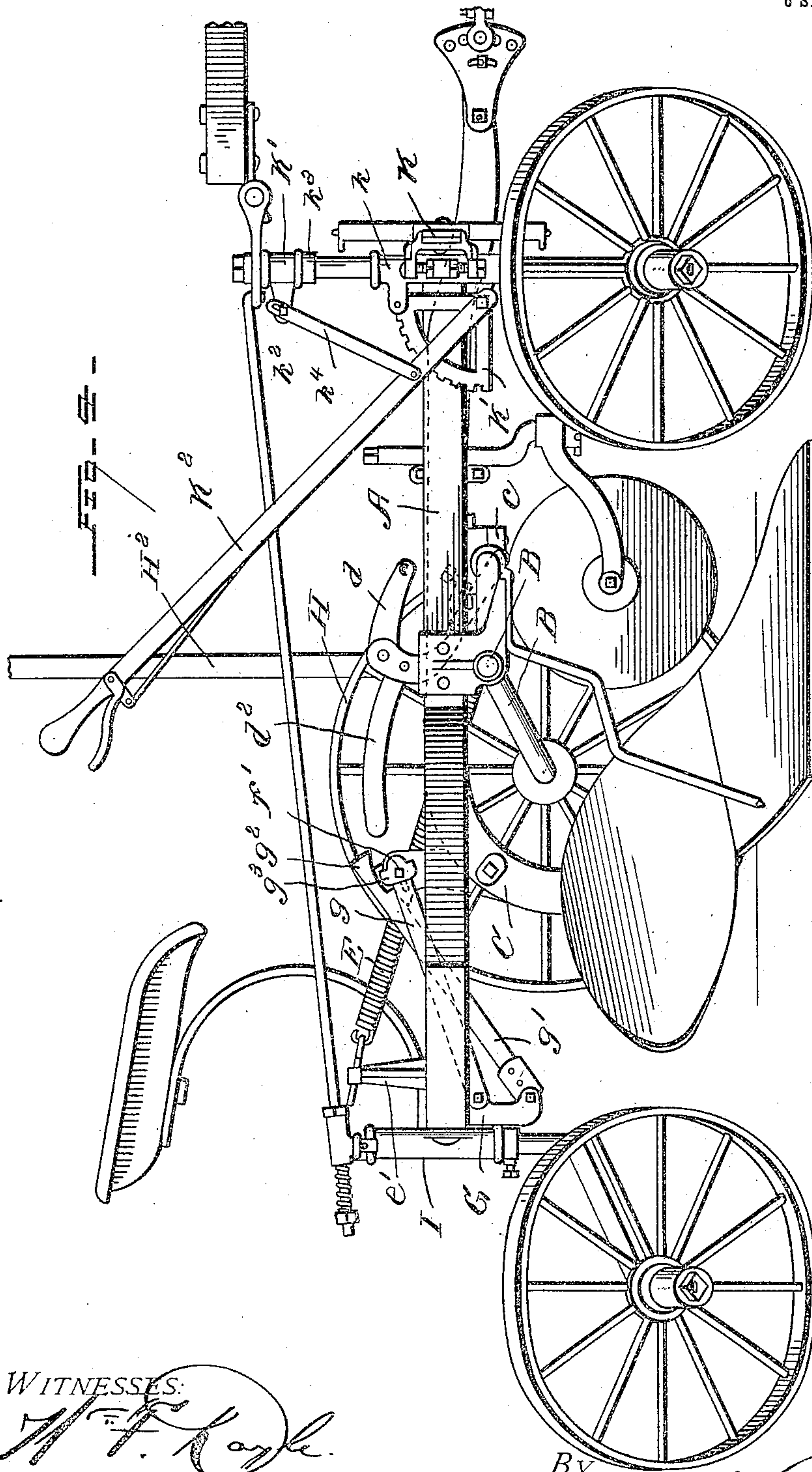
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6 SHEETS—SHEET 4.



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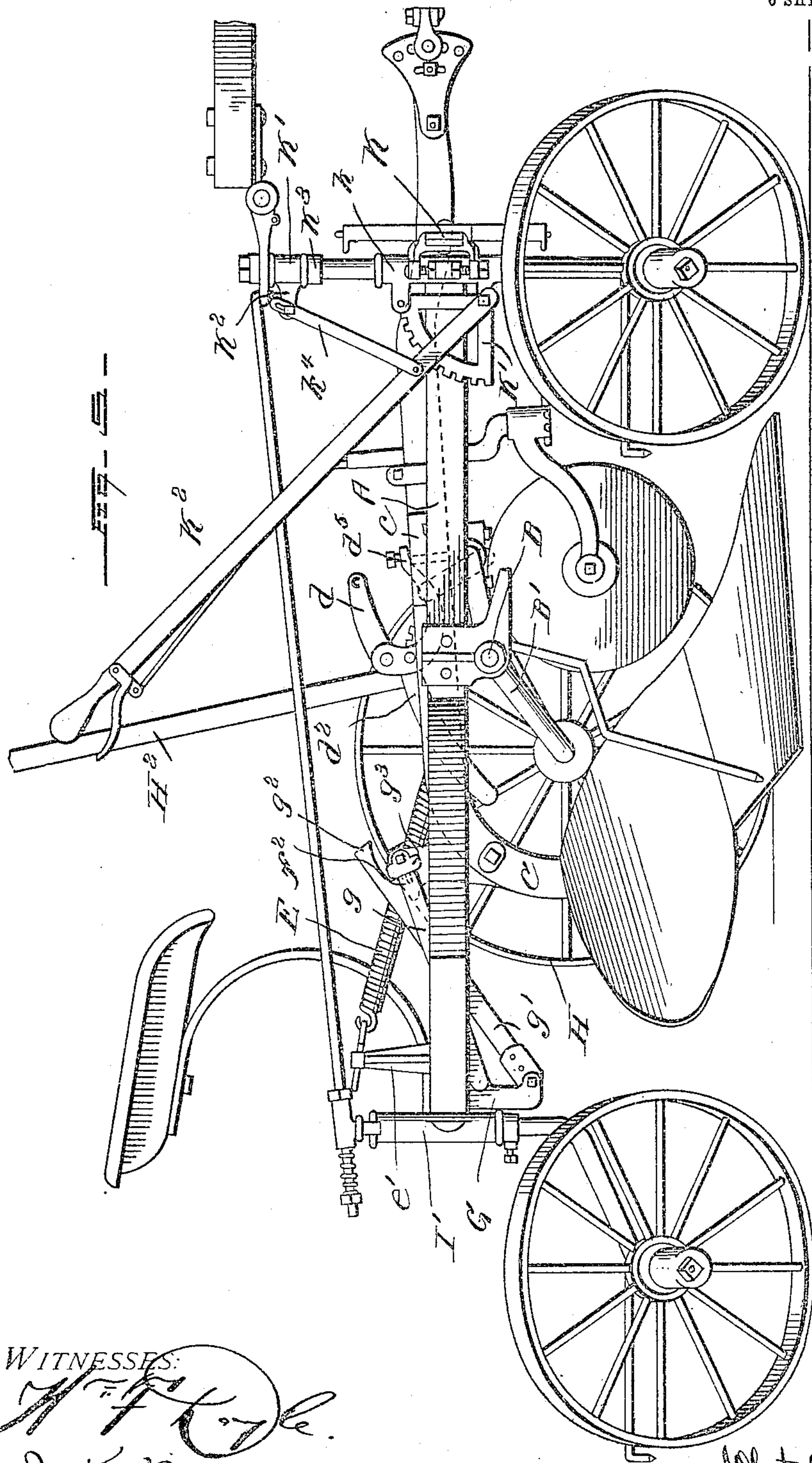
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6 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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SULKY-PLOW.

No. 816,771.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed August 9, 1905. Serial No. 273,393.

To all whom it may concern:

Be it known that I, WILLIAM L. BEALL, a citizen of the United States, residing at Albion, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Sulky-Plows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to the class of plows, and more particularly to the class of sulky-plows; and it consists in certain new constructions and combination of parts whereby new and desirable results are secured.

In the accompanying drawings I have illustrated the best form in which I have contemplated embodying my invention, and my said invention is disclosed in the following description and claims.

In said drawings, Figure 1 is a view in elevation of the right side of the machine when looking toward the front of the same, showing the plow in the fully-raised position. Fig. 2 is a top or plan view with the seat and some other of the parts removed to more clearly show the novel features. Fig. 3 is a view in elevation similar to Fig. 1, showing the parts in their positions when the lowering of the plow has begun. Fig. 4 is a similar view showing the plow in its lowest position. Fig. 5 is a similar view showing the parts as they are at the beginning of a rising movement of the plow. Figs. 6 and 7 are details of the means for supporting the rear of the plow. Figs. 8 and 9 are detail views of the levers and connections by which the bail of the plow-supporting shaft is raised and lowered. Fig. 10 is a detail of the adjustable bearing for the furrow-wheels.

In the drawings, A is the main frame of the machine, which may be of any preferred form. The form in which I have chosen to make the same is best shown in Fig. 2, from which it will be seen that said frame has its greatest width slightly forward of the center of the same and that it narrows therefrom toward the front and rear ends. The front of the frame is provided with the usual yoke A' to permit the plow-beam to have the requisite vertical movement.

To the side bars of the frame near the cen-

ter are secured two brackets a a' , which depend below the frame. They are provided below the frame-bars with bearings in which the plow-supporting shaft B is mounted. This shaft between the side bars of the frame is provided with a double crank or bail B'. Brackets c c' are secured to the sides of the plow-beam C. These brackets extend downwardly below the beam and at their lower ends are provided with bearings in which the central portion of the bail B' is journaled, securing the plow-beam to the bail by a pivoted connection, as is usual in this class of implements.

The bracket a' on the land side of the frame extends above the frame-bar to which it is attached and at its upper end is provided with a bearing a^2 , extending a short distance on each side of the frame-bar. In this bearing is journaled a rock-shaft D, (see Figs. 8 and 9,) the inner end of which is provided with the crank or lever arm d , the outer end of which is provided with the pin d' , which forms a foot-rest or pedal upon which a foot of the operator can be placed to move the rock-shaft in one direction.

The outer end of the rock-shaft is provided with the lever-arm d^2 , the outer end of which is provided with the pin or projection d^3 , upon which the other foot of the operator can be placed when it is desired to move the rock-shaft in the opposite direction. The lever-arm d^2 extends rearwardly to near the seat for the operator, so that when the foot of the operator is placed thereon the weight of the operator can be brought to bear to assist in the movement of the plow. The pin or projection d' is in such location that it forms a convenient foot-rest for the right foot of the operator, while the pin d^3 is too near the seat to serve as a constant foot-rest for the left foot. A foot-rest d^4 is therefore provided for the left foot, which may be an extension of or a projection from the rock-shaft D or from the lever-arm d^2 near the shaft. To the rock-shaft D is also secured the forwardly-extending curved arm d^5 , and this arm is connected by a link b to the bail B' by an ear b' , formed upon or secured to the bail or in any preferred manner. This link and the arm d form what may be termed a "toggle" or "toggle-lever." It will thus be seen that by the operators applying pres-

sure on the arm d and forcing the same forward the bail will be turned downward. This movement will bring the lever-arm d^2 up into position, thereby applying pressure to the same, and the bail will be drawn upward. 5 The outer end of the arm d^5 is broadened, as shown at d^6 in Fig. 2, so as to overlap the link b , and this broadened portion is provided with a set-screw d^7 , which engages the link 10 and limits the downward movement of the bail. When the parts are in this position, they will be automatically locked by reason of the fact that the pivotal connection between the arm d^5 and link b (indicated at b^x , Fig. 9) will be in a straight line connecting the center of the rock-shaft D and the pivotal connection of the link b with the ear b' . The set-screw d^7 is provided to limit the downward movement of arm d^5 at the exact point where this locking takes place. The lock is instantly released when the foot-lever d^2 is depressed.

A strong spiral spring E has its forward end secured to the bail, as at e , and at its rear end is secured to an upwardly-extending bracket e' . As the bail is lowered tension is put upon this spring, and when it is desired to raise the bail this tension serves to very materially assist the movement.

30 The plow-beam being pivoted to the bail, the raising and lowering of the bail effects the raising and lowering of the plow. It is, however, desirable that when the plow is lowered the point of the plow shall be depressed to a greater extent than the rear of the plow in order that the plow may rapidly engage the ground and begin work. It is also desirable that when the plow is being 35 raised the point of the plow will be raised in advance of the other portions of the same, so that if in engagement with the ground the plow will of itself assist in its upward movement. To accomplish this, I provide a second connection between the beam and the 40 frame at the rear part of the plow.

To the beam of the plow I secure the bracket F , which extends upwardly above the top of the beam. The upper end of this bracket has a downward inclination to the rear and is provided with a rearwardly-extending projection f . To the inside of the rear end of the frame I secure the bracket G . Two links $g g$ are pivoted to this bracket about midway of its length, and their opposite ends are pivoted to the bracket F , one on each side of the same, a bolt f' forming the securing means and the pivot. To the lower end of the bracket G is pivoted a pawl or dog g' , which extends upwardly between the links 50 $g g$ and has its free end over the top of the bracket F . Near its free end this dog g' is provided on its under side with a notch-shoulder g^2 , which is adapted at certain times to engage with the rearwardly-extending projection of the bracket F . This en-

gagement takes place when the plow is raised, as will hereinafter be explained; but when so engaged the main weight of the rear end of the plow rests upon the dog g' .

Supposing the plow raised to its highest 70 position and the parts to be in the positions shown in Fig. 1, in this position the bail which moves in the arc of a circle on moving in the direction opposite to that in which it moved when raising the plow will move downwardly to a greater degree than it will move forward. At this time the rear end of the plow is engaged by the dog or pawl g' , and any movement of the rearward end of the plow must be in the arc of the free end of the said 80 dog or pawl. As this dog or pawl is more nearly in a vertical position than the bail B' and as the arc of its movement is greater than that of the bail, as the bail moves downward the rearward end of the plow does not descend as rapidly as the forward end of the same, and the point of the plow is given a markedly greater degree of depression, enabling it to first engage the ground.

Upon the forward end of one of the links 90 $g g$ is secured a plate g^3 , provided with a finger or trip g^4 , extending horizontally toward the opposite link g and under the free end of the dog g' . The bolt f' , connecting the forward ends of the links $g g$, passes through a slot f^2 95 in the bracket F' , which is approximately parallel with the top of the bracket. As the plow descends the links $g g$ have a different arc of movement, they being pivoted to the bracket G above the pivot of the dog g' . 100 Therefore as the plow descends the bolt f' will be drawn backward in the slot f^2 and the trip g^4 will move in the same direction under the dog g' toward the shoulder g^2 . When the plow has reached the position in which its 105 point will have engaged the ground to some depth, the trip raises the free end of the dog g' from its engagement with the rearward projection of the bracket F , permitting the heel of the plow to descend to find its proper level. 110 This it is enabled to do, as the bail will then have reached its lowest point, and the rear of the plow descending more rapidly than the point will move downward in an arc of which the bail will be the center. The links $g g$ will 115 not in any way restrict or retard this movement, as, the bolt f' having been drawn toward the rear end of the slot f^2 , the only effect of this downward movement of the plow upon the relation of the links $g g$ will be 120 to move the bolt f' slightly forward in the slot f^2 , as shown in Fig. 4, leaving the pin in such position as to give some freedom of movement to the heel of the plow in order that the plow may conform to the configuration of the ground. If now pressure be applied to the lever-arm d^2 to raise the plow, the point of the plow will at first be raised, because there will be no immediate lifting action upon the heel of the plow, for the only 130

lifting action will be by the bail B. When, however, the bail has traversed such a position of its arc as to move the bracket F' backward sufficiently to bring the pin to the forward end of the slot f^2 , the further movement of the bail will cause the rear of the plow to rise rapidly until the shoulder of the dog g' engages the rearward projection of the bracket F. During this movement the spring E will have been exerting its force to assist in the movement of the plow, and when it has reached its highest position the spring will serve to hold the plow raised until the lever d is again pressed forward to again cause the plow to descend in the manner heretofore described.

The land-wheel H is connected to the shaft B by being mounted on a short axle secured to or forming a part of a bracket H', having a sleeve h revolubly secured to the shaft B. To this bracket is secured an arm or lever H², provided in a well-known way with a sliding pawl h' , which engages the notches of a notched segment B², rigidly secured to the shaft B. By moving the arm or lever H² up or down the shaft B can be lowered or raised in respect to the axle of the land-wheel H to the point desired, in which position it will be retained by the pawl h' .

It will be seen that the turning of the bail to lower the plow will turn the ratchet and bracket H', so as to lower the shaft in relation to the axle of the wheel H, so that little, if any, manipulation of the lever H² will be necessary in the ordinary operation of the plow.

In order to secure the ready adjustment of the rear furrow-wheel, such wheel is mounted as follows: The upwardly-extending portion of the axle of this wheel is journaled in the elongated sleeve or bearing I', which is pivoted to the plow-frame by a pivot-bolt i passing through an opening in the plate on one side of the sleeve I'. On the other side of the sleeve a plate J is rigidly secured to the frame-bar. This plate J at top and bottom has ears j extending outwardly from the plate, and a bolt J', having screw-threads extending its entire length, is passed through the ears and secured therein by the nut j' . The plate I on the same side of the sleeve is provided with an arm i' , the outer end of which is provided with an opening, through which the bolt or screw J' can freely pass. The parts are assembled by passing the bolt or screw J' through the opening in this arm with nuts j^2 j^3 above and below the same. By loosening one of these nuts and turning the other toward it the adjustment desired may be secured.

The forward furrow-wheel is secured in like manner to an arm K, extending from and forming a part of the main frame, and its adjustment toward or from the land-wheel can be accomplished in the manner just de-

scribed. In the case of this wheel provision is made for adjusting the same vertically in respect to the plow-frame. To the sleeve k , forming the vertical bearing for the axle of this land-wheel, is secured a notched segment K', and a lever K² is pivoted to move along this segment. Near the top of the axle, considerably above the sleeve-bearing k , a short sleeve k' , provided with the ear k^2 , is journaled on the axle. This sleeve is held from sliding downward by the abutment k^3 , rigidly secured to the axle. A link k^4 is pivoted to the ear k^2 and to the lever K² at a distance from the pivoted point of the lever. The lever is provided with a sliding pawl for engaging the notched segment in a well-known way, and by raising or lowering this lever the wheel can be adjusted in respect to the plow-frame to the degree desired.

In order to provide a positive stop for the bail of the plow, so that it may never be allowed to descend to an undue degree or to a point from which it would be difficult to raise it, I form the bracket on the furrow side of the plow-frame in which the shaft B is journaled with the forwardly-extending arm a^x . This arm has its forward end curved inwardly into the path of the bail and forms a rigid stop therefor when it shall have reached that point.

I do not limit myself to the exact construction of the parts as shown, as these may be varied to a considerable extent without departing from the principle of construction and operation. For instance, instead of having a slot in the bracket F the same result may be accomplished by having a slot in each of the links g g .

What I claim, and desire to secure by Letters Patent, is—

1. A sulky-plow having mechanism for lowering the plow to the ground point downward, and for raising it out of the ground point first, the said construction including a link construction having a sliding connection with the plow, and a dog for being engaged and disengaged from said plow, said dog having its rear pivot lower than the rear pivot of the link construction substantially as described.

2. A sulky-plow, having mechanism for lowering the plow to the ground point downward and for raising it out of the ground point first, the said construction including a double-link construction and a dog for being engaged and disengaged from said plow, said dog having its pivot below the level of the rear pivot of said double link and said dog extending upwardly between the two parts of said link substantially as described.

3. A sulky-plow having mechanism for lowering the plow point downward and for raising it up point first, said construction including a link construction having a sliding connection with the plow, with the forward

pivot of the link construction forming the connection with the plow, and a dog for being engaged with and disengaged from the plow, the said dog being pivoted lower than
5 the rear pivot of said link construction whereby the forward end of the link construction has first a rearward movement in respect to the plow when the plow begins to descend and a forward movement in respect to said
10 plow as the plow finishes its downward movement substantially as described.

4. In a sulky-plow, the combination with the main frame of a bearing for a furrow-wheel pivoted upon the said frame to swing
15 in a vertical plane, of a screw construction for swinging said bearing on its pivot and securing it in the position desired, substantially as described.

5. The combination with the main frame,
20 of the plate provided with a bearing for a furrow-wheel, said plate being secured to said frame on one side of the bearing by a pivot, and provided on its opposite side with an

arm, and adjusting devices for engaging said arm, substantially as described. 25

6. The combination with the main frame, of the plate provided with a furrow-wheel bearing, said plate on one side of the bearing being pivoted to said frame and having an outwardly-extending arm on its opposite
30 side provided with an opening therethrough, a screw passing through said arm and nuts for adjusting said arm upon said screw, substantially as described.

7. In a sulky-plow, the combination with
35 the main frame, of a bearing for a furrow-wheel pivoted upon said frame to swing in a vertically-disposed plane and means for adjusting the said bearing in different positions, substantially as described. 40

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM L. BEALL.

Witnesses:

G. W. BORTLES,
M. L. DEAN.