

(No Model.)

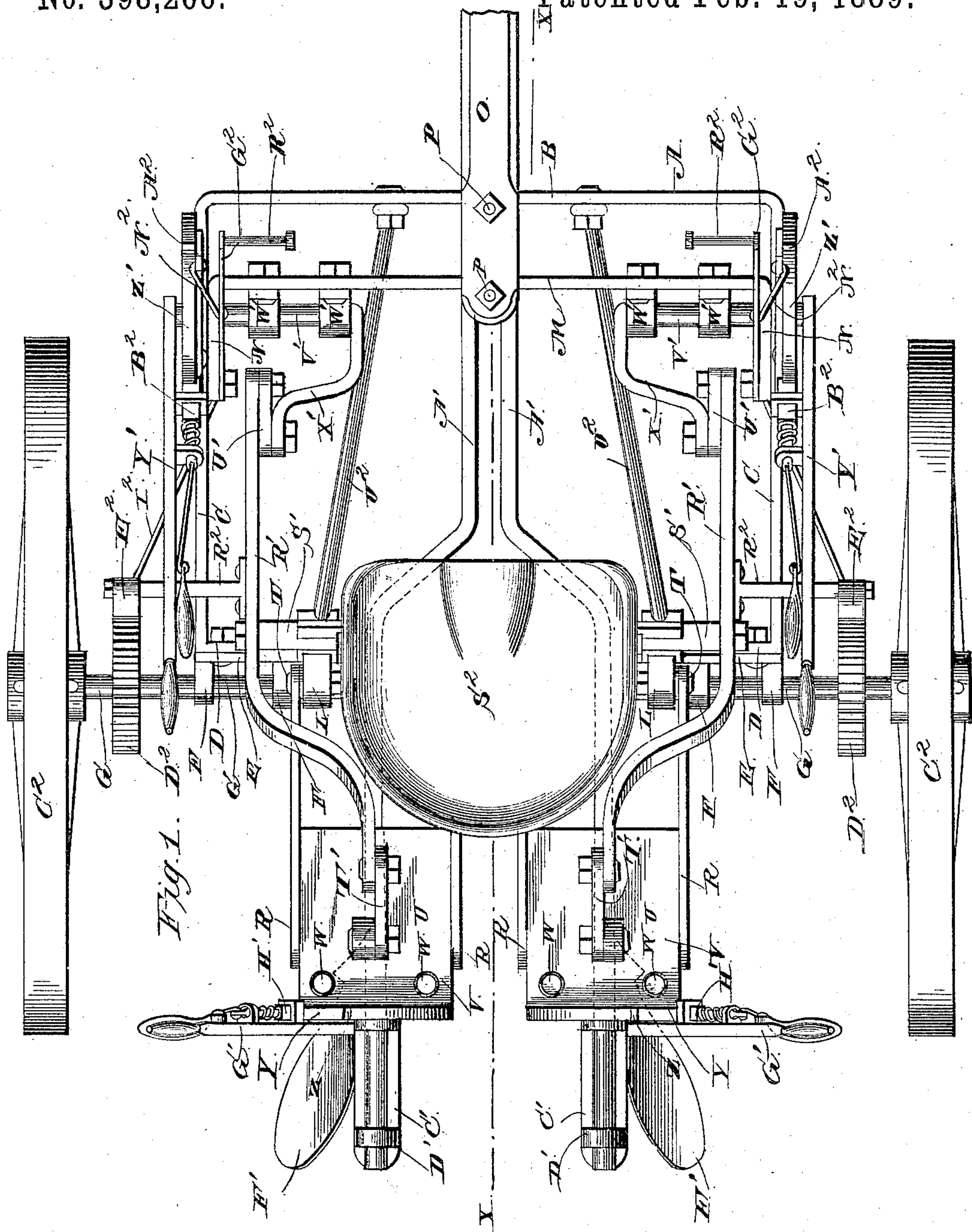
3 Sheets—Sheet 1.

I. M. LINDERMAN.

SULKY PLOW.

No. 398,266.

Patented Feb. 19, 1889.



Witnesses

Witnesses
M Fowler
J L Siggers

Inventor,

Fra M. Linderman

By His Attorneys

Chas. Knowlton

(No Model.)

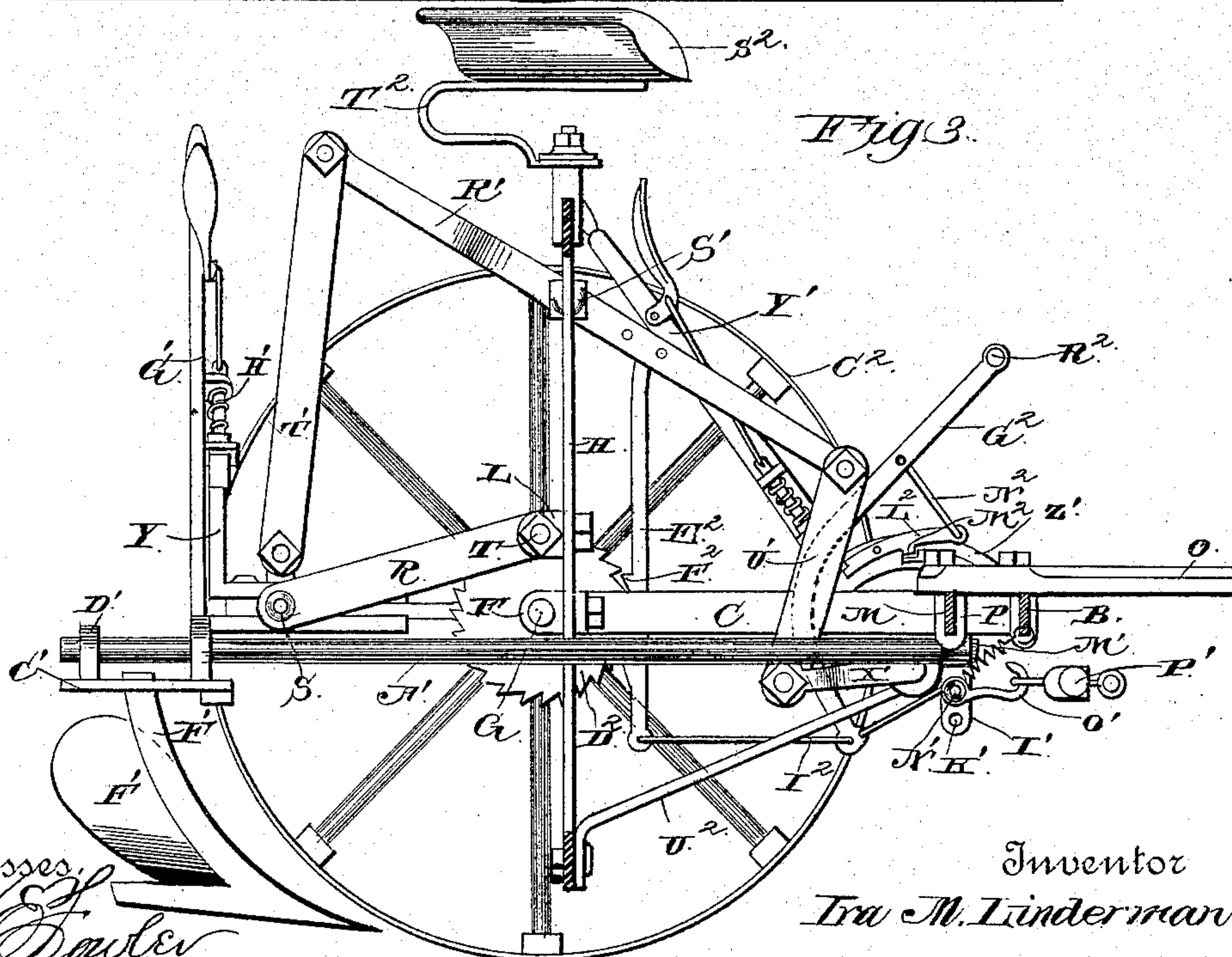
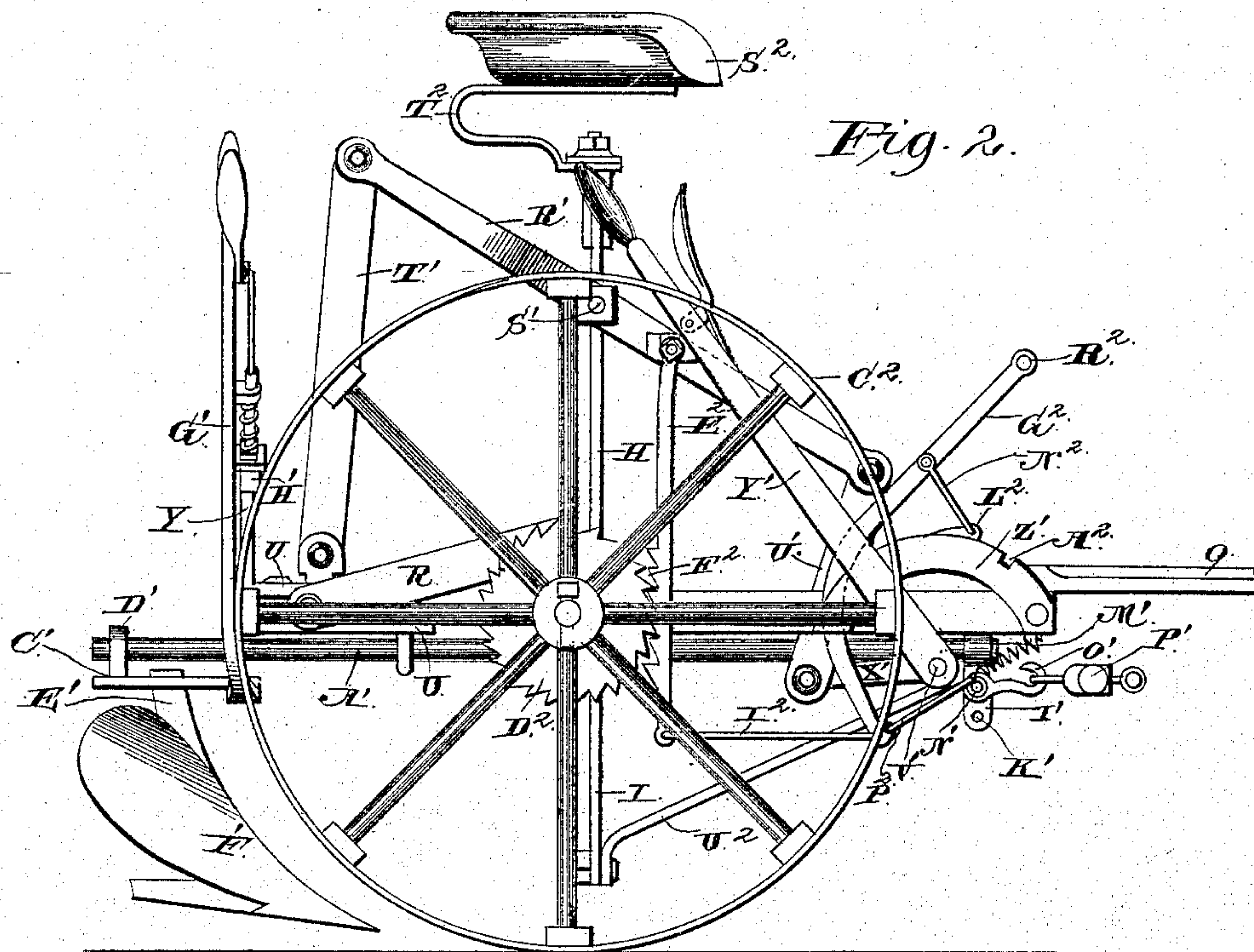
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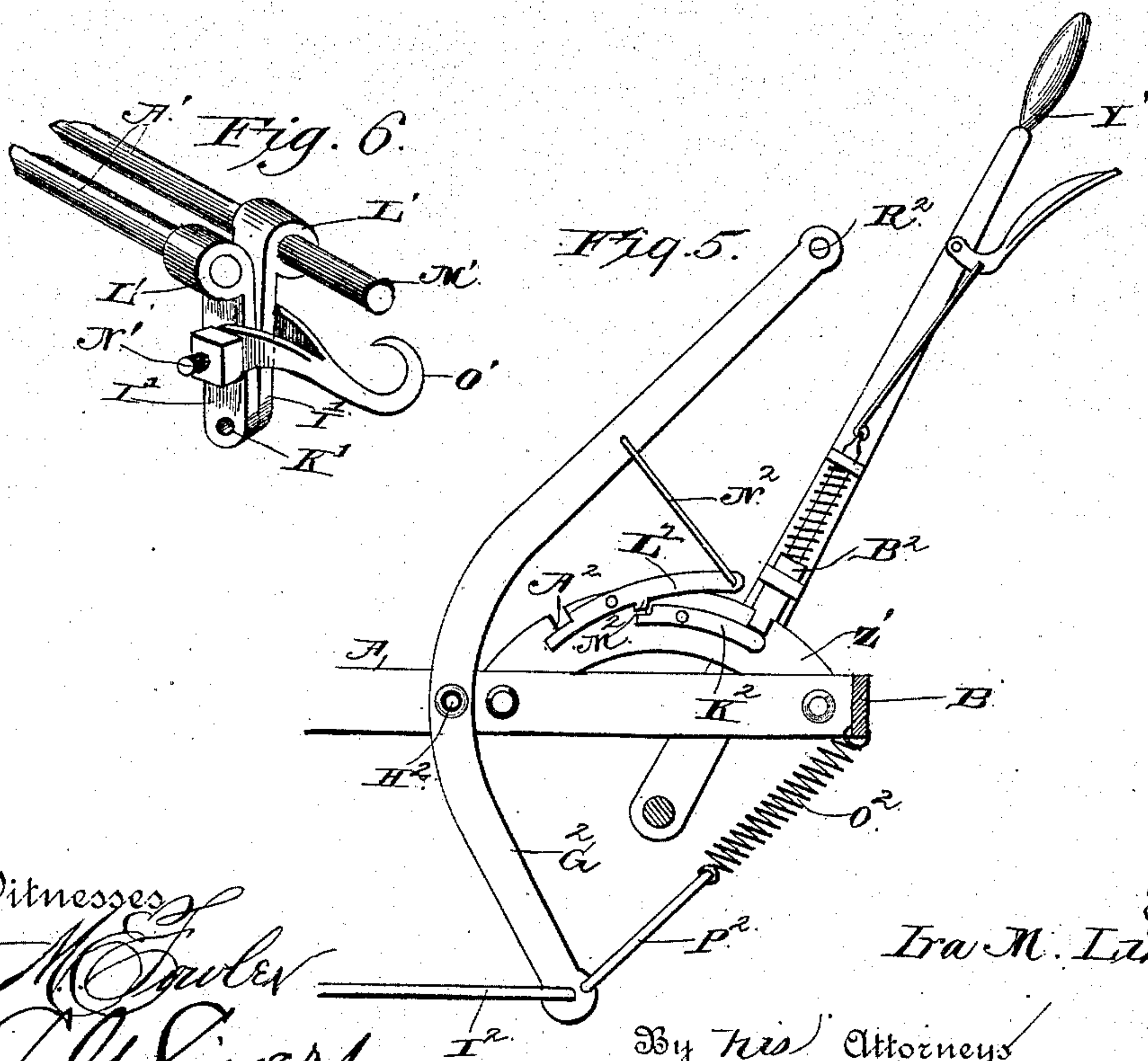
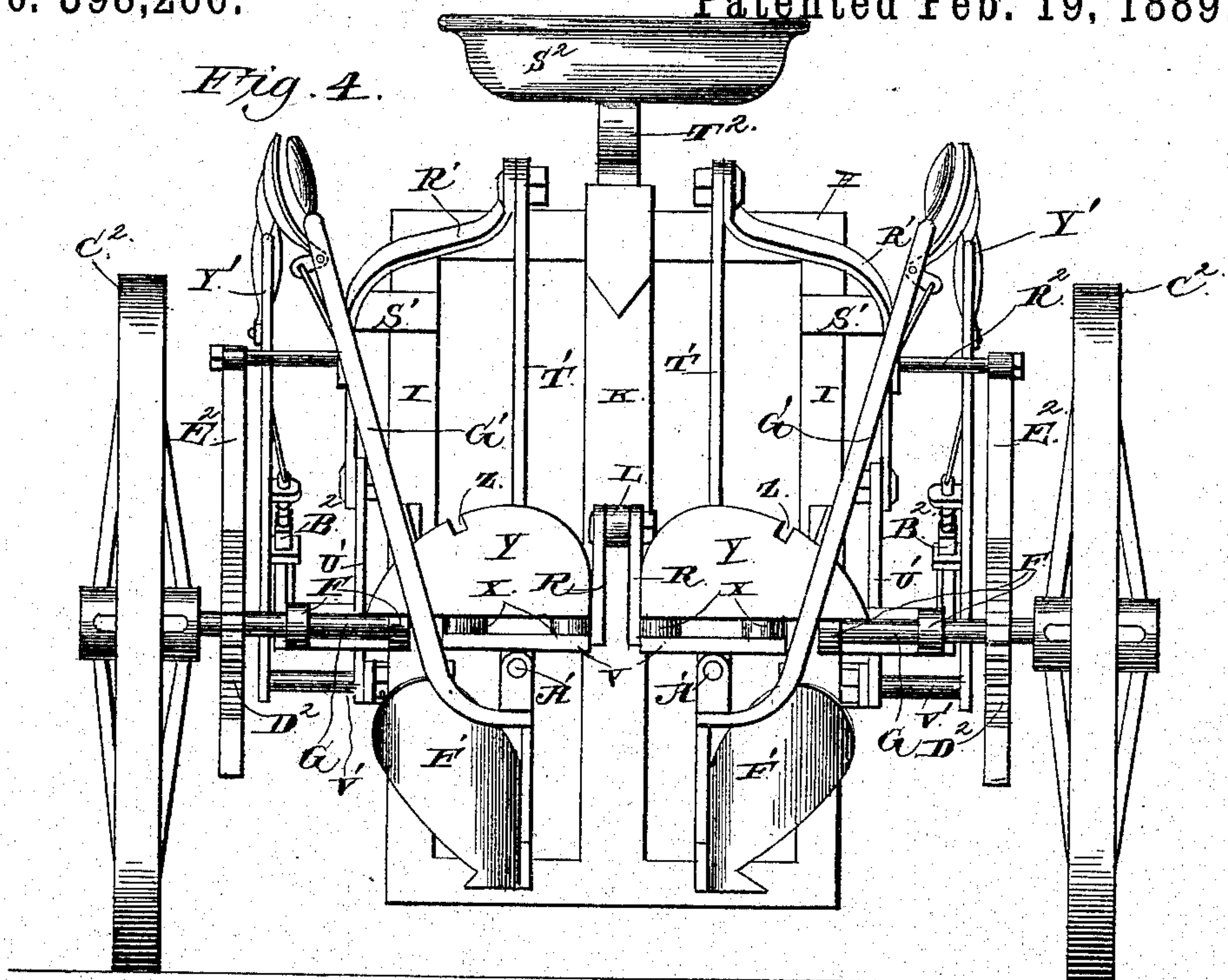
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Witnesses

M. Fowler =
L. L. Figgers

Inventor,

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By his Attorneys

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UNITED STATES PATENT OFFICE.

IRA M. LINDERMAN, OF ELMIRA, NEW YORK.

SULKY-PLOW.

SPECIFICATION forming part of Letters Patent No. 398,266, dated February 19, 1889.

Application filed August 7, 1888. Serial No. 282,139. (No model.)

To all whom it may concern:

Be it known that I, IRA M. LINDERMAN, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented a new and useful Improvement in Sulky-Plows, of which the following is a specification.

My invention relates to an improvement in sulky-plows; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view of a sulky-plow embodying my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical longitudinal sectional view of the same, taken on the line x of Fig. 1. Fig. 4 is a rear elevation. Figs. 5 and 6 are detail views.

A represents a U-shaped frame, which comprises a front bar, B, and rearwardly-extending arms C. The rear ends of the said arms are turned inward at right angles to form brackets D, which are bolted to transverse plates E. The latter are provided on their rear sides with bearings F, in which are journaled a pair of short axles, G, that project outward in opposite directions.

H represents a vertical rectangular frame, which is secured to the plates E and has a pair of vertical side bars, I, and a central vertical bar, K. From the said bars I and K, at a suitable distance from their lower ends and arranged in the same horizontal plane, project rearwardly-extending brackets L, which are bolted to the said bars, as shown.

Arranged parallel with the front bar, B, is a cross-bar, M, which has its end turned rearward at right angles, as at N, and bolted to the arms C of the frame A.

O represents the draft tongue or pull, which has its heel arranged on the centers of the bars B and M and secured thereto by means of clip-bolts P.

R represents two pairs of arms, which are connected at their rear ends by transverse rods S, and the front ends of the said arms are pivoted to the brackets L by means of bolts T, whereby the said arms are adapted to be moved upward and downward.

U represents a pair of frames, each of

which comprises a pair of horizontal plates, V, which are rectangular in shape, are arranged one above the other, and are connected at their rear corners by vertical bolts W, washers or blocks X being secured on the said bolts to space the plates apart. The cross-bars S, which connect the rear ends of the pairs of arms R, pass through the frames U between the plates V, and thereby the said frames are adapted to move longitudinally on the said rods. Formed at the rear end of each upper plate V is a sector-shaped plate, Y, which is arranged in a vertical plane and is provided with notches Z in its periphery.

A' represents a pair of bars or plow-beams, which have their front ends curved inward and caused to lie in proximity to each other. The rear portions of the said beams or rods pass longitudinally under the frames U, and are rigidly secured thereto by means of clip-bolts B'. The said rods or beams project rearward from the frames, and on the same are mounted plates C', which are provided with bearings D', engaged by the rods or beams, the said plates being thereby adapted to be turned on the said rods or beams, as will be readily understood. The upper ends of standards E' are secured to the said plates, and to the lower ends of the said standards are secured plows F', of suitable construction, which are adapted to turn furrows outward in opposite directions. Rigidly secured to each plate C' is a vertical hand-lever, G'. The said hand-levers bear against the rear sides of the sector-plates Y and are provided with spring-actuated locking-bolts H', which are adapted to engage the notches Z, so as to secure the levers to the sector-plates at any desired adjustment. By means of these levers it will be understood that the plows may be arranged either in a vertical position or any desired lateral inclination with their soles at any desired distance apart, so as to prevent the plows from becoming choked when operating in turf or ground that is obstructed with weeds.

Right and left hand plows F' are illustrated in the drawings, adapted to throw furrows in opposite directions, and when thus equipped the invention is used as a side-hill or reverse plow, one plow being at work while the other

is idle. I propose, however, to in some instances employ plows which are adapted to throw furrows in the same direction, and thereby adapt the invention for use as a gang-plow, and I do not therefore desire to limit myself in this particular.

I will now proceed to describe my improved clevis.

I' represents a pair of vertical arms, which are provided in their lower portions with a series of transverse openings, K', arranged one above the other, and have eyes L' at their upper ends, through which the front ends of the plow beams or bars A' extend. The said plow beams or bars have heads or swages M' formed at their front ends to prevent them from slipping rearward through the eyes, and the arms I' are connected together and pivoted by means of the transverse bolts N', which pass through one pair of the openings K' at any desired distance from the lower ends of the arms.

O' represents a draft-hook, which has its rear end forked, bearing against the outer side of the arms I', and pivoted on the bolt N', and to this hook is connected the usual doubletree, P'. By means of the pivotal bolt N' the arms I' are rendered movable independently of each other, and the beams or rods A' being secured to the longitudinally-movable frames U, and having their front ends guided in the eyes L' of arms I', the plows are adapted to work back and forth in a longitudinal direction independently of each other, so that the greatest draft will be exerted on the plow which happens to be deepest in the soil.

R' represents a pair of levers, which are fulcrumed near their centers on brackets S', that project from the outer sides of the frame H near the upper end thereof. The rear ends of the said levers are connected to the frames U by means of links T', and the front ends of the said lever are pivoted to depending links U'.

V' represents a pair of rock-shafts, which are journaled in bearings W', that are bolted to the cross-bar M, and are provided at their inner ends with arms X', the rear ends of which are pivotally bolted to the lower ends of the links U'.

Y' represents a pair of hand-levers, which are secured to the outer ends of the rock-shaft V' and play on the outsides of sector-plates which are secured to the front corners of the frame A and are provided with notches A². The levers Y' have the usual spring-actuated locking-bolts B², which are adapted to engage the notches A² and to lock the levers Y' in any desired position.

It will be observed that when the levers are moved forward the rock-shafts are partly rotated, so as to elevate the rear end of the arms X' and cause the links U' to raise the front end of the levers R' and the links T', connected to the lower ends of said levers, to lower the rear end of the arms R and the

frames U, and consequently lower the plows to the ground. When the hand-levers are moved rearward, the plows are elevated, as will be very readily understood. Secured to the shafts or axles G and revolving therewith are wheels C², which serve to support the frame and impart rotary motion to the shafts G, and also secured to the said shafts and rotating therewith are ratchet-wheels D².

E² represents a pair of links, which depend from and are pivoted to the levers R' at a suitable distance in advance of the fulcrums thereof, and said links are provided on their rear side with ratchet-teeth F², which are adapted to be engaged by the ratchet-wheels.

G² represents a pair of foot-levers, which are curved, as shown in Figs. 2, 3, and 5, are fulcrumed to the arms C of the frame by means of bolts H², and have their lower ends connected to the lower ends of the links E² by means of rods I². Pivoted on each of the sector-plates Z' is a trip-lever, K², the longer end of which bears normally under the locking-bolt B² of the hand-lever Y' when the latter is secured at the forward limit of its movement. A lever, L², is also pivoted to each of the sector-plates Z', is provided with the depending studs M², adapted to engage the proximate rear end of its companion trip-lever K², and the rear end of the said lever L² is normally arranged under the notch A², near the rear end of the sector-plate. The said levers L² have their front ends connected to the levers G² by means of rods N².

O² represents a pair of coiled retractile springs, which have their front ends secured to the front corners of frame A and have their rear ends connected to the lower ends of the foot-levers G² by means of rods P², the function of the said springs being to normally retain the foot-levers and the levers K² and L² in the positions hereinbefore stated, and illustrated in Fig. 5, when the hand-lever is moved forward. From the upper end of each foot-lever projects an inwardly-extending rung or arm, R², which is readily pressed against by the foot of the driver.

The operation of this part of my invention is as follows: When the lever Y' is secured at the forward end of its stroke, and the foot-lever is disengaged by the foot of the driver, the spring O² draws forward on the rear of the foot-lever, and consequently causes the rod I' to move the lower end of the ratchet or rack link forward, so as to disengage the latter from its companion ratchet-wheel, and the upper end of the foot-lever draws rearward on the rod N², and consequently raises the front end of the lever L². The link-levers being disengaged from the ratchet-wheels, and the plows being lowered, are caused to operate in the ground as the machine is drawn forward, and the locking-bolts B² being in engagement with the notches at the front end of the sector-plate Z' the rock-shafts V' are locked, so that the links U' T' and the levers R' are caused to main-

tain the frames U against vertical movement, and thereby prevent the plows from rising from the furrows. In order to elevate the plows, the operator presses with his foot against the foot-levers G^2 , so as to thrust the upper ends of the same forward. This movement of the foot-levers causes the rods N^2 to lower the front ends of the levers L^2 , so that the latter depress the rear ends of the trip-levers K^2 and cause the front ends of said trip-levers to release the locking-bolts B^2 from the front notches of the sector-plates Z' . At the same time the rearwardly-moving lower ends of the foot-levers thrust the rods I^2 rearward against the tension of the springs O^2 and cause the teeth of the links E^2 to become engaged with the teeth of the wheels D^2 , and the said wheels in revolving with the forward motion of the machine draw downward on the said links, and consequently draw downward on the front ends of the levers R' , so as to raise the frames U by means of the links T' and arms R, and consequently elevate the plows. As the front ends of the levers R' descend, the links U' move the arms X' downward, and thereby partly rotate the rock-shafts V' , so as to cause the latter to move the hand-levers Y' to the position indicated in Figs. 2 and 3, when their locking-bolts become engaged with the rear notches, A^2 , and with the rear ends of the levers L^2 , thus serving to lock the hand-levers in this position, and consequently prevent the plows from descending. As soon as this is accomplished the operator removes his feet from the levers G^2 , and the springs O^2 instantly draw upon said levers and the rods I^2 , so as to disconnect the toothed links E^2 from the wheels D^2 .

From the foregoing it will be understood that the plows may be automatically raised or lowered without any exertion on the part of the driver other than to operate the levers G^2 , and hence no strength is required on the part of the driver, and the plow may be very readily operated even by small boys.

A seat, S^2 , is supported above the center of the vertical frame H by means of a spring, T^2 .

U^2 represents a pair of brace-rods, which connect the vertical corners of the frame H to the front bar, B, of the main frame.

Having thus described my invention, I claim—

1. The combination, in a sulky-plow, of the frame, the arms R, pivoted thereto, the plows supported by the said arms, the levers R' , pivoted to the frame, the links T' , connecting the rear ends of said levers to the plows, the rock-shafts V' , having the arms X' , the links U' , connecting said arms to the front ends of the levers R' , and the levers Y' , attached to the rock-shafts, for the purpose set forth, substantially as described.

2. The combination, with the frame of a sulky-plow, of the pivoted arms R, the plows connected to and supported by said arms and adapted to play longitudinally independently of each other, means, substantially as set

forth, to raise and lower the plows, and the clevis having the arms I' pivoted together and provided with openings or guides for the front ends of the plow-beams, and in which the latter are adapted to move longitudinally independently of each other, substantially as described.

3. The combination of the plows adapted to move longitudinally independent of each other, and having the beams or bars A' , and the arms I' , pivoted together and having the guides through which the front ends of the beams or bars extend, and in which the latter are adapted to reciprocate, substantially as described.

4. The clevis having the arms I' , pivoted together and adapted to rock independently of each other, in combination with the plow beams or bars having their front ends movable longitudinally and guided through said arms, and a draft hook or device pivotally connected to the fulcrum of said arms I' , substantially as described.

5. The combination, with the frame of a sulky-plow, of the arms R, pivoted thereto, the rods S, connecting the rear ends of said arms in pairs, the frames U, having the longitudinal openings through which the rods S extend, whereby said frames are movable longitudinally, the plow-beams secured to the said frames, and the clevis having the guides for the front ends of the guide-beams, the latter being adapted to move in a longitudinal direction in said guides independently of each other, substantially as described.

6. The combination, in a sulky-plow, of the levers R' , connected to the plows and adapted to raise and lower the same, the gear-wheels D^2 , revoluble with the supporting-wheels, and the links E^2 , connected to the levers R' and adapted to engage the gear-wheels, the levers G^2 , connected to the said links, and the springs to normally move the links out of engagement with the gear-wheels, substantially as described.

7. The combination, in a sulky-plow, of the gear-wheels, the levers to raise the plows, the links E^2 , attached to said levers and adapted to engage the gear-wheels, the levers G^2 , connected to said links, the plates Z' , having the notches A^2 , the levers Y' , connected to and adapted to operate the elevating-levers, the spring-actuated bolts on said levers Y' to engage the notches A^2 , the trip-levers K^2 , pivoted to the plates Z' , and the levers L^2 , also pivoted to said plates and adapted to operate the trip-levers, said levers L^2 being connected to and operated by the levers G^2 , substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

IRA M. LINDERMAN.

Witnesses:

R. J. MARSHALL, Jr.,
E. G. SIGGERS.