

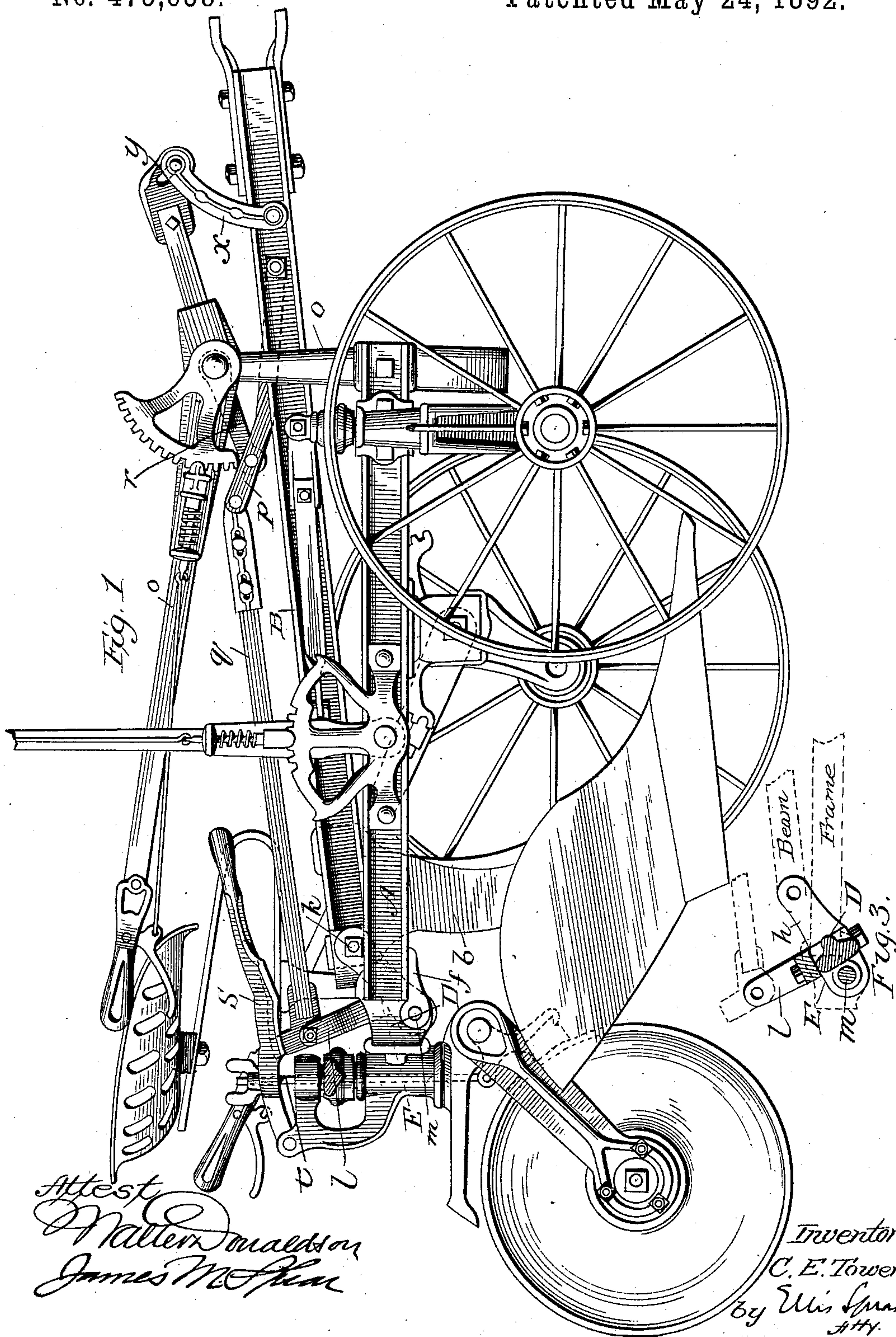
(No Model.)

2 Sheets—Sheet 1.

C. E. TOWER.
SULKY PLOW.

No. 475,638.

Patented May 24, 1892.



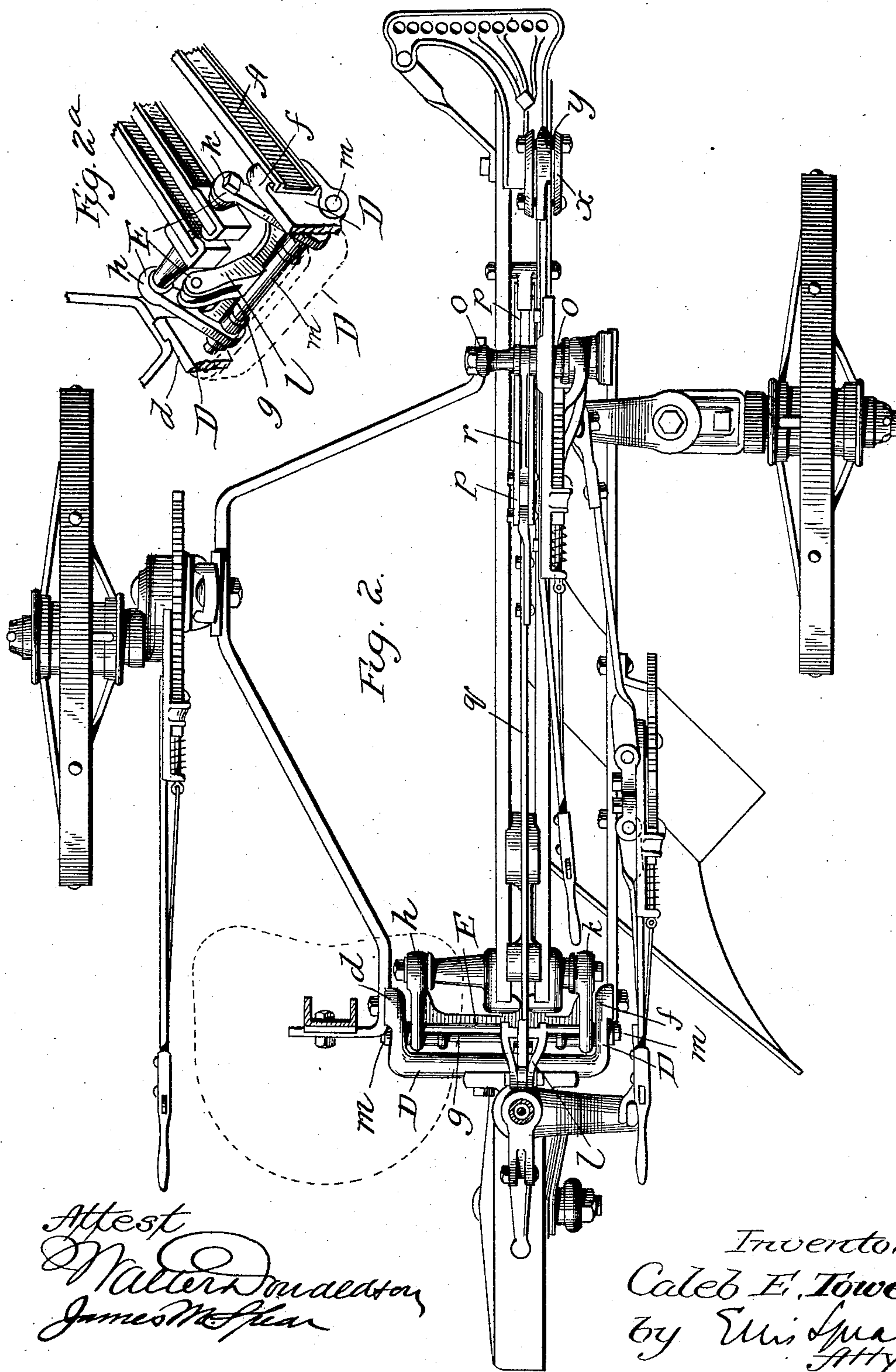
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UNITED STATES PATENT OFFICE.

CALEB E. TOWER, OF SOUTH BEND, INDIANA, ASSIGNOR TO THE ECONOMIST
PLOW COMPANY, OF SAME PLACE.

SULKY-PLOW.

SPECIFICATION forming part of Letters Patent No. 475,638, dated May 24, 1892.

Application filed July 2, 1891. Serial No. 398,270. (No model.)

To all whom it may concern:

Be it known that I, CALEB E. TOWER, a citizen of the United States of America, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Sulky-Plows, of which the following is a specification.

My said invention relates particularly to devices for suspending the plow-beam from the main frame of a sulky-plow and devices for raising and lowering the said beam or for permitting it to rise or fall; and in respect to the raising and lowering mechanism the invention consists of suspending levers connecting, respectively, the forward and rear ends of the plow-beam with the main frame, said levers being also connected with each other and with operating mechanism, whereby both ends of the plow-beam are simultaneously raised or lowered.

It also consists in a loose forward connection by means of which the front end of the plow-beam may automatically rise or fall.

My invention also includes details of construction in connection with the invention above specified, and all as hereinafter explained.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a plow in side elevation, with parts removed to show more clearly those included in the invention. Fig. 2 is a similar plan view. Fig. 2^a shows the bell-crank. Fig. 3 is a detail view.

In the drawings, A marks the main frame of the plow. The right-hand bar of the frame is straight and the left-hand bent, as heretofore shown by me; but the particular form of the frame constitutes no part of the invention, and is herein shown simply for the purpose of illustrating the relation of the new parts to the old. The frame is supported upon wheels, which are provided with ordinary adjusting-levers. The plow-beam is shown at B. The rear end is fixed to the head of the plow-standard *b*, and is supported on the frame of the plow by a vertically-adjustable connection. This connection consists of a pivoted frame having the general form and function of a bell-crank lever. In the construction shown it is hinged in a casting D.

This casting has two side arms *d f*, extending forward and rigidly connected to the side bars of the frame. The bell-crank lever E has a cross-bar *g* and two arms *h k*, which extend forward. It has also a vertically-extending arm *l* on the cross-bar *g*. It is pivoted on the casting D by means of a bolt *m* in the rear part of the horizontal portion of the bell-crank lever. The rear end of the beam B extends between the arms *h* and *k*, and is pivoted upon the forward ends of said arms. The construction and arrangement are such that when the upper arm on the bar *g* is pushed backward the front ends of the horizontal arms will rise and lift the rear end of the plow-beam and with it the plow.

Upon the front end of the main frame of the plow is a double standard O, between the parts of which the plow-beam is placed, and in which it may rise or fall. In the top of this double standard is pivoted an operating-lever *o*, the free end of which extends back within reach of the driver when he is in the seat. The front end is connected to the plow-beam by a link *x*, the upper end of which is attached to the front end of the lever by a pin and slot *y*, so that when the lever is fixed in place on its segment the plow may have a certain amount of free vertical movement equal to the amount of movement of the pin in the slot; or it may have movement one way or the other, or be held rigidly by placing a suitable casting in the slot against the pin either above or below it.

It will be understood that in soft soils the plow must be held so that it can rise in relation to its frame and wheels, but must be limited in its downward movement, so that it will not cut too deeply. On the other hand, in hard soils, the plow should be permitted to drop, in order to hold its proper depth of furrow, but should not be permitted to rise in relation to the frame and wheels, so that the frame will continue to hold it down to its work. Again, on even ground, or when plowing old corn-ground, or on uneven surfaces—such as dead-furrows—both the lifting and the dropping movement in relation to the frame are desired, and all these movements are permitted by adjusting the lever *o* at the proper points in the sector for the effects

above described. The proper adjustment for each effect will be understood readily by the operator, and when the plow is properly set for the kind of soil or surface the plow-foot

5 will move evenly and the frame will adjust itself to maintain the proper relation between itself and the foot, as above explained.

The front end of the plow-beam and the vertical arm of the bell-crank-lever frame are
10 connected by toggle-joints $p\ q$. These toggle-joints may be attached anywhere at the front end, so as to be worked by the operating-lever o , but very conveniently the part p is pivoted between the two parts of the plow-
15 beam in front of the double standard O . It is connected to the forward end of the part q by a joint, and the rear end of the part q is pivoted to the arm l near its upper end. These toggle-joints are connected to the piv-
20 otting-bolt on top of the double standard by means of the link r . Preferably the part q of the toggle-levers is made adjustable in length, in order that these parts may be preferably set in relation to the other parts.

25 From the description and illustration given it will be apparent that when the front end of the plow-beam is raised the toggle-levers p and q will be brought from a crooked toward a straight line, and as the rear end is pivoted
30 above the line of the beam and its jointed connection to the horizontal part of the bell-crank lever E the rear end of the frame will be raised by the same movement and lowered by the reverse movement. Thus the plow-
35 foot is raised securely at heel and point for passing obstructions and similar purposes, and at the same time the plow is allowed quickly to enter the soil.

In Patent No. 442,673, granted to me by the
40 United States Patent Office, I have shown a form of brake-operating mechanism substantially as illustrated in Fig. 1 of the drawings hereto attached. In connection with this mechanism I have shown a device for auto-
45 matically operating the brake through the toggle-joint heretofore described.

The brake-lever is shown at S . It is a lever of the second order and by raising the forward end pulls on the brake-rod t and is made thus
50 to apply the brake t^x , as shown in dotted lines. The forward end of this lever is in reach of the driver. The lever also extends over the upper prolonged end of the arm l , which for convenience is made to move in a groove in
55 the under side of the brake-lever, and this grooved surface is so adjusted to the upper end of the said arm l that when the arm is pushed back, as in the act of raising the plow, it also raises the forward end of the brake-
60 lever and applies the brake, the plow being lifted a sufficient distance, as for the purpose of transportation.

I claim as my invention—

1. In combination, the frame, the plow-beam,
65 suspending devices at its front and rear ends, an operating-lever connected to the beam, and

operating connections extending from the sus- pending device at the front to that at the rear and independent of the operating-lever, whereby the operation of one end of the beam 70 will be communicated to the other, substantially as described.

2. In combination with the main frame of a sulky-plow and with the plow-beam, a piv-
75 otted lever connecting the rear end of said beam to the main frame, a lever connected to the front end of the plow-beam, and toggle-joint connections between the front end of the beam and the lever at the rear end of the beam, substantially as described. 80

3. In combination with the main frame of a sulky-plow and with the beam, a bell-crank lever at the rear end of said beam, connect-
85 ing it to the frame, a toggle-joint connection between said bell-crank lever and the front end of the beam, and a lever connected also to the front end of the beam, substantially as described.

4. In combination, the frame, the plow-
90 beam in connection therewith and vertically movable in relation thereto, the lifting-lever for the plow-beam, supported on the frame and having fastening devices for fixing the lever rigidly in any position in which it may
95 be adjusted, and the slotted connection between the lifting end of the lever and the forward end of the plow-beam, arranged to permit slight vertical movement of the plow-beam while the lever is rigidly held, substan-
100 tially as described.

5. In combination, the supporting-frame, the vertically-movable plow-beam in connec-
105 tion therewith, the lifting-lever supported on the frame and having fastening devices to hold it in adjusted position, the link x , piv- oted to the front end of the beam, and the slot-
and-pin connection between said link and the lifting end of the lever, substantially as described.

6. In combination, the frame having the
110 standard O at its forward end, the plow-beam, the suspending device at the rear of the beam, the operating-lever pivoted to the standard and connected to the front end of the beam, and the connection between the front end of
115 the beam and the rear suspending device, consisting of the toggle-arms $p\ q$ and the link r , substantially as described.

7. In combination with the supporting-
120 frame and the plow-beam, the bell-crank lever journaled on the frame and connected to one end of the beam, the operating-lever pivotally connected to the frame and connected, also, to the beam, and the operating connec-
125 tions extending longitudinally of the plow-beam from the bell-crank lever at one end and connected to the beam at the other end, said connections being sustained by the frame, substantially as described.

8. In combination, the supporting-frame,
130 the vertically-movable beam with the lever mechanism supported by the frame for rais-

ing and lowering said beam, the furrow-wheel journaled at the rear of the frame, the brake supported adjacent to the said wheel, and the operating means for the brake, consisting of
5 the brake-lever pivoted to the frame and extending over the plow-beam to be operated when the same is raised and the connecting-rod from the brake-lever to the brake, substantially as described.

10 9. In combination, the frame carrying a seat, the vertically-movable beam with operating means therefor, the rear furrow-wheel, the brake to act thereon, the brake-lever extending into proximity to the driver's seat
15 for hand operation and over the beam for

automatic operation through the raising of the beam, substantially as described.

10. In combination, the frame, the beam, the bell-crank lever at the rear end for suspending said beam, the operating-lever, and 20 the connections to the bell-crank lever for moving it, the brake, and the brake-lever connected thereto, said brake-lever engaging the bell-crank lever, substantially as described.

In testimony whereof I affix my signature in 25 presence of two witnesses.

CALEB E. TOWER.

Witnesses:

JOHN M. CHAPMAN,
LEIGHTON PINE.