

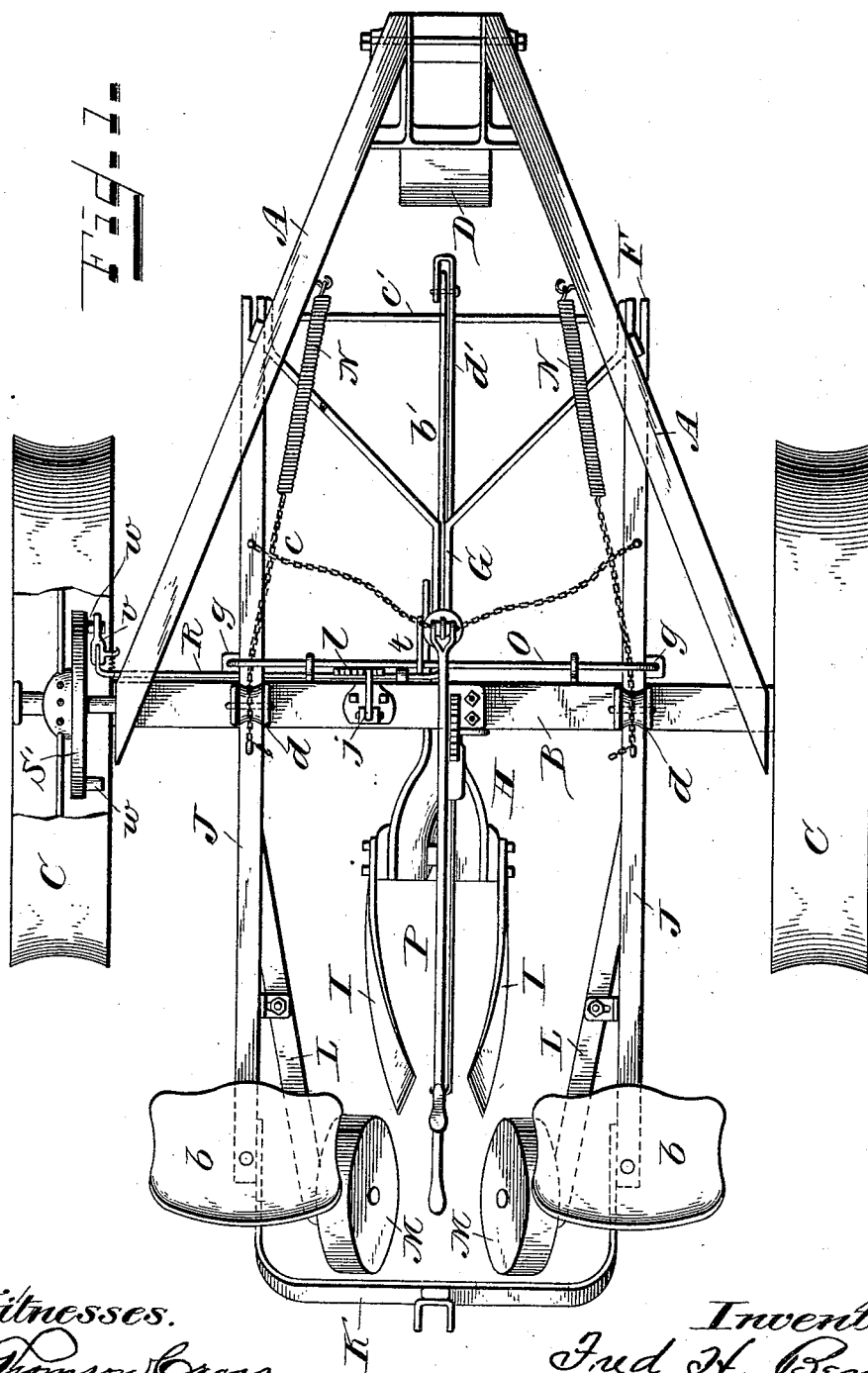
(No Model.)

2 Sheets—Sheet 1.

F. H. BEMIS.
TRANSPLANTER.

No. 520,478.

Patented May 29, 1894.



Witnesses.
Thomson Cross.
Bernard H. Kaufeldt.

Inventor:
Fred H. Bemis
by Chauncey
his Atty.

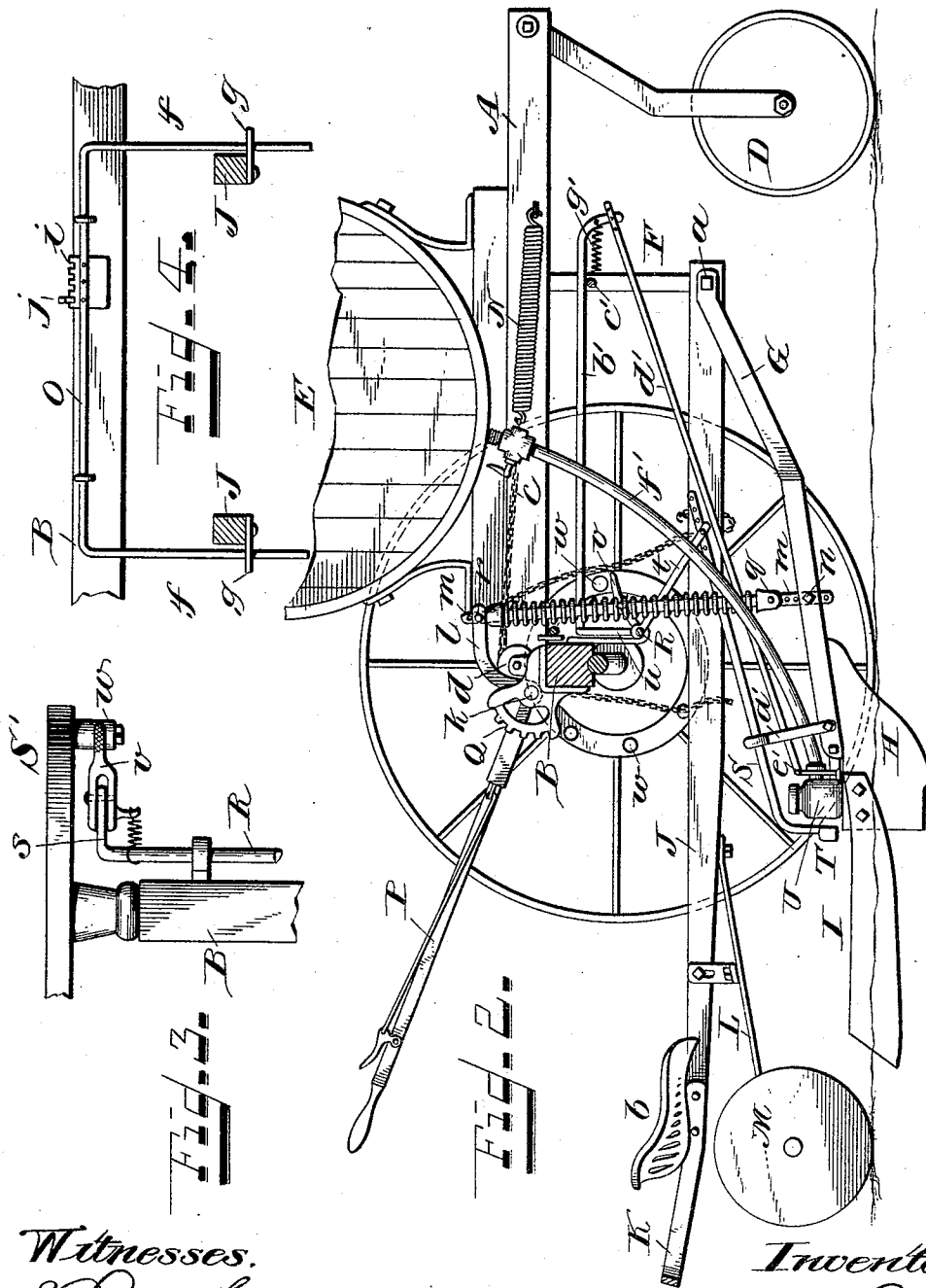
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UNITED STATES PATENT OFFICE.

FRED H. BEMIS, OF FOOTVILLE, WISCONSIN.

TRANSPLANTER.

SPECIFICATION forming part of Letters Patent No. 520,478, dated May 29, 1894.

Application filed October 16, 1893. Serial No. 488,250. (No model.)

To all whom it may concern:

Be it known that I, FRED H. BEMIS, a citizen of the United States, residing at Footville, Rock county, Wisconsin, have invented certain new and useful Improvements in Transplanters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to machines for transplanting plants, such as tobacco, cabbage, tomato and the like, and it has for its object the provision of a machine that shall be simple, inexpensive and thoroughly efficient in use.

The novelty of my invention will be hereinafter set forth and specifically pointed out in the claims.

In the accompanying drawings: Figure 1, Sheet 1, is a plan view of a transplanter embodying my invention, but with the water tank and conduit removed therefrom. Fig. 2, Sheet 2, is a sectional side elevation of the machine. Fig. 3, Sheet 2, is an enlarged detail of the tripping dog and associated parts. Fig. 4, Sheet 2, is a detail front elevation of the yoke connecting the seat bars.

The same letters of reference are used to indicate identical parts in all the figures.

The main frame of the machine is composed of two forwardly converging side bars A and a rear transverse bar or axle B having spindles on which are journaled the two supporting wheels C. Under the front end of the frame is journaled a caster-wheel D of the usual or any suitable construction. Upon the frame is supported the tank or water barrel E, Fig. 2, and extending down from the frame, on each side, are two rigid supports F, to the lower ends of which, as at *a*, are pivoted the forward diverging ends of the two part draw bar G, carrying at its rear end the furrow opener H and scrapers, or covers, I of the usual or any suitable construction. Likewise, pivoted as at *a* to the supports F, are the two rearwardly extending parallel seat bars J carrying seats *b* for the plant setters. The rear ends of the seat bars are connected by a bar K pivoted or connected thereto so as to maintain the seat bars always equidistant, but not to prevent their independent up and down play to a limited extent. In addition

to their being pivoted as at *a*, so as to have up and down play both together and independently, the pivotal holes or bearings of the seat bars are so formed as to permit of their swinging sidewise or horizontally, for an important purpose hereinafter explained. The seat bars carry on adjustable spring arms L, the usual or any suitable inclined presser wheels M, following the scrapers to firm the earth in the furrow.

To properly support the bars J and the plant-setters thereon, while at work, and to regulate the pressure of the wheels M on the ground, I employ stout coiled springs N which have their forward ends secured to the frame, and have, extending from the rear ends, chains *c* which pass back over grooved rollers *d*, journaled on the beam B, and thence down to the seat beams, which have hooks *e* thereon to engage the links of the chains. By this construction, should the character of the soil require but a light pressure, the seat bars can be raised and engaged with upper links of the chain, so that when the plant-setters sit on the seats, the springs will be put under tension and will partly support the weight of the plant-setters, as will be readily understood. This construction also allows an adjustment of the seat bars to give equal pressure of the wheels M, when the plant-setters are of unequal weights. If, for instance, one of them was a man and the other a boy, the man's seat-bar would be raised and the boy's lowered, so that the springs N would equalize their weight. In this simple but efficient manner, the pressure of the wheels M can be regulated at will, and in this feature of my invention, I do not limit myself to pressure wheels alone, as the same result would be obtained by any soil-pressing device carried by the seat bars.

The next feature of my invention relates to the sidewise or horizontal adjustment of the seat bars, which is a very important feature in planting on side hills. Without it, in planting on side hills, owing to the tendency of the machine to slip or slide down the hill, the presser wheels would not evenly straddle the furrow and rows of plants, and one of the wheels might even run over and destroy the plants. To remedy this objection, I provide for the lateral swinging of the seat bars on

their forward supports at *a*, as before described, and I provide a yoke bar *O*, see Fig. 4, with pendent side arms *f*, which extend down loosely through perforated lugs *g* secured to the seat bars. The bar *O* extends, and is adjustable, through supporting lugs or eyes *h* on the front face of the beam *B* and has upon it a rack *i*, which is engaged by a latch *j* pivoted on the beam *B*. From this construction, it will be seen that while the seat bars can be moved up and down, the lugs *g*, playing freely on the arms *f*, yet they are locked by the yoke bar and latch *j* from any sidewise movement. But in side hill work, the latch is disengaged from the rack and the seat bars are swung together sidewise and up hill, bodily by the plant-setters taking hold of them and swinging them up and are then relocked by the latch in their properly adjusted positions so that the slipping of the machine, down hill, brings the presser wheels in proper position on each side of the furrow. In returning on the next row, the latch would again be disengaged and the seat bars swung in the manner above described in the opposite direction with reference to the machine, but still up hill, and again be relocked, as will be readily understood.

The next feature of my invention relates to the means for raising and lowering the draw bar and furrow opener and forcing the latter into the ground to the proper depth under all conditions of the soil. This consists in a hand lock lever *P*, pivoted on the beam *B*, as at *k*, and engaged by a segment rack *Q*, on the beam. There is an upward and forward extension *l*, of the lever *P*, to which is connected the upper end of a substantially vertical bar *m*, whose lower end is pivoted by a pin or bolt *n*, Fig. 2. A coiled spring *o* surrounds the bar *m*, and is confined at its ends between the end of the lever *P* and an adjustable seating piece *q* carried upon the bar *m* and held up by a key or spring cotter inserted through one of a series of perforations in the bar, to regulate the initial tension of the spring *o*. There may be a similar seating piece between the upper end of the spring and the extension *l*, of the lever, and a pin *r* is passed through the extension of the lever and a slot in the upper end of the bar *m*, as shown. It will be seen from this construction, that when the lever *P* is raised, the draw bar and runner will be forced down by the compression of the spring alone, and in this way the depth of penetration of the runner, is regulated and adjusted as desired. When the lever *P* is drawn down, the tension of the spring is released and the end wall of the slot in the bar *m*, coming in contact with the pin *r*, the draw bar and runner are lifted entirely from the ground. Under this last adjustment, chains *p* extending from the extension *l* of the lever to the seat bars, which chains are slack when the seat bars and runner are down at work, will be made taut and will lift

the seat bars also up from the ground, as will be readily understood.

The next feature of my invention relates to the distribution of water in the furrow, and the means for the regular and automatic spacing of the plants therein. To this end I provide a rock shaft *R*, journaled below and parallel to the beams *B* in bearings secured thereto, and having three crank arms *s*, *t*, *u*, projecting therefrom. Of these the first, *s*, on the outer end of the rock shaft and projecting forward, carries a spring dog *v*, Fig. 3, pivoted thereto and engaged at equal intervals by projections *w* on a disk *S'* secured to the adjacent wheel *C* and concentric therewith, so that the revolution of the wheel, as the machine advances, turns the rock shaft a limited distance for each projection and then releases it as each projection passes the dog. The next crank arm *t* extends forward below the rock shaft and has adjustably pivoted thereto, the forward end of a rod *S*, which extends downward and rearward and carries a suitable hand guide *T* just in rear of a valve casing *U* carried by and movable with the draw bar *G* in rear of the furrow opener. The rod *S* with its hand guide, is free to slide backward and forward in any suitable guide support as *a'* projecting up from the draw bar. The third crank arm *u* extends up vertically from the rock shaft and has pivoted at its upper end the rear end of a forwardly projecting rod *b'* which, properly supported, in this instance by a cross rod *c'* between the supports *F*, has its forward end adjustably connected to a rod *d'*, which extends back and has its rear end connected to any suitable device or handle *e'* for operating the valve within the casing *U*. A pipe *f'* connects the valve casing *U* with the watertank *E*. A coiled spring *g'* is shown connecting the rod *b'* with the cross rod *c'* to hold the parts in normal position with the valve closed, with the hand guide *T* in its foremost position and with the crank arm *u* resting against the beam *B* to afford a stop resisting the action of the spring *g'*. Any other suitably arranged spring connecting this system of levers or movable arms with a fixed part of the machine, would answer the same purpose.

It will be readily understood from the above description and reference to the accompanying drawings, that as the machine advances and each successive projection *w* engages the dog *v'*, the rock shaft *R* is rocked forward, thereby pressing forward the rods *b'* and *d'* and opening the valve in the casing *U* to permit a flow of water into the furrow, and pressing back the rod *S* and hand guide *T* which latter, while going back, remains stationary with reference to the ground, owing to the speed of the machine in moving forward and the proper adjustment of the parts, the projection *w* having passed the dog *v*, the spring *g'* resets the parts. The travel of the hand guide *T* is regulated to properly space the plants, so that the plant-setters on the

seats *b* alternately rest their hands, holding a plant with its roots in the furrow where the water has been deposited, against the guide T, which travels backward with reference to the machine as it advances, but remains stationary with reference to the ground, until, just as the scrapers I draw the earth into the furrow around the roots, the hand guide is thrown forward and the other plant setter has a plant ready and places it in position to be operated on as above.

While I have described and prefer the use of a valve in the discharge end of the water conduit, it is evident that such valve and its operating devices may be dispensed with, in which case the water would flow into the furrow continuously.

Having thus fully described my invention, I claim—

1. In a transplanter, the combination of a furrow opener, a water tank, a water conduit therefrom discharging in rear of the furrow opener and a separate movable hand guide automatically operated to retain the hand of the operator at a fixed point in the furrow.

2. In a transplanter, the combination of a furrow opener, a water tank, a conduit therefrom discharging in rear of the furrow opener, a valve in said conduit, means for opening and closing the same, and a separate movable hand guide automatically operated to retain the hand of the operator at a fixed point in the furrow.

3. In a transplanter, the combination of a furrow opener, a water tank having a discharging valve in rear of the furrow opener, a separate movable hand guide for the plant-setter and means operated by the traction of the machine for opening said valve and carrying said hand guide first backward and then forward.

4. In a transplanter, the combination of a furrow opener, a seat bar for the plant-setters on each side thereof and having both vertical and horizontal play, earth pressing devices carried by said bars, a yoke connecting said bars, and a lock for holding said bars in their horizontally adjusted positions, substantially as described.

5. In a transplanter, the combination of a furrow opener, a seat bar for the plant-setters

on each side thereof and having both vertical and horizontal play, a press wheel carried by each bar, a yoke connecting said bars and a lock for holding said bars in their horizontally adjusted positions, substantially as described.

6. In a transplanter, the combination of a furrow opener, a pivoted seat bar for the plant-setters on each side of the furrow opener, an earth pressing device carried by each bar, a supporting spring for each seat bar and adjustable connections between said springs and seat bars, for the purpose specified.

7. In a transplanter, the combination of a furrow opener, a pivoted seat bar for the plant-setters on each side of the furrow opener, a press wheel carried by each bar, a supporting spring for each seat bar and adjustable flexible connections between said springs and seat bars, substantially as described.

8. In a transplanter, the combination of the main frame, the springs N connected thereto at one end, the pivoted seat bars J with press wheels M, and the chains *c* passed over guide rollers *d* and connected at one end to the seat bars and at the other to the springs N, substantially as described.

9. In a transplanter, the combination of the main frame the pivoted seat bars J carrying press wheels M, the yoke O having lateral adjustment on the main frame and connecting the seat bars and a rack and latch connection between said yoke and main frame, substantially as described.

10. In a transplanter, the combination of the rock shaft R with crank arms *s t u*, an adjustable rod S carrying a hand guide T in rear of the furrow opener and pivoted to the arm *t*, the rod *b'* pivoted to the arm *u*, the rod *d'* adjustably pivoted to the rod *b'* and connected at its rear end to a valve controlling device in a water discharge conduit, a trip dog pivoted to the arm *s*, a spring, as *g'*, for resetting the parts, and tripping projections *w* on a disk carried by one of the wheels of the machine, substantially as described.

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