

(No Model.)

2 Sheets—Sheet 1.

W. R. HINDS.
SOIL PULVERIZER.

No. 305,591.

Patented Sept. 23, 1884.

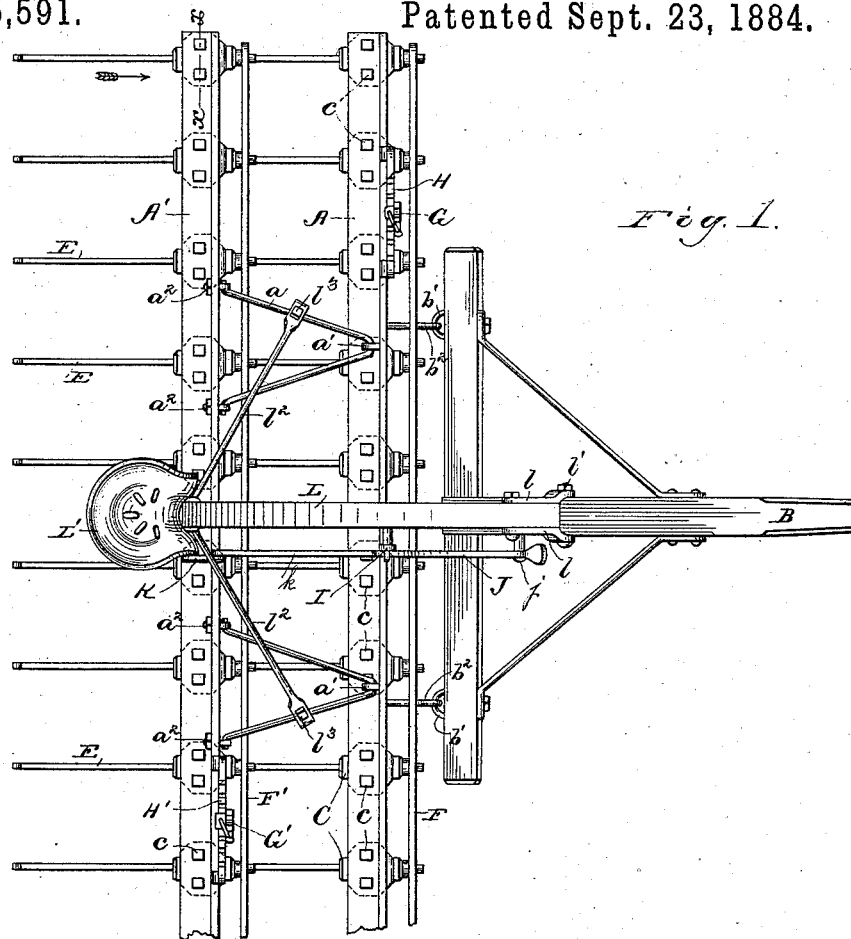


Fig. 1.

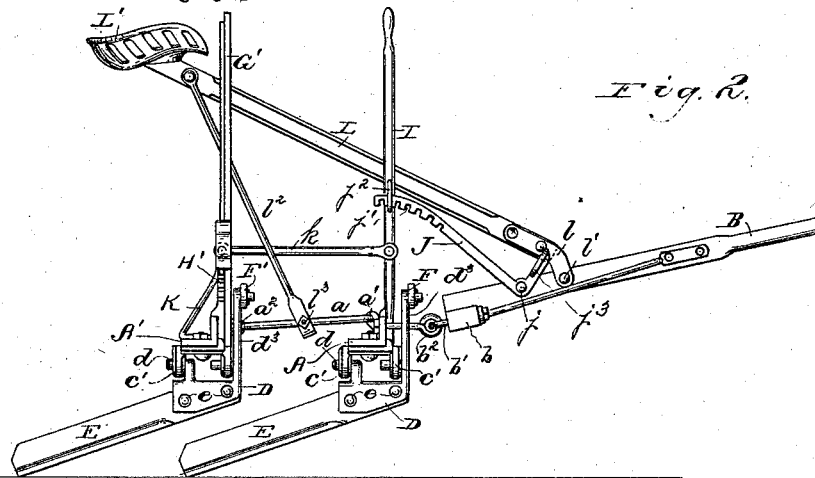


Fig. 2.

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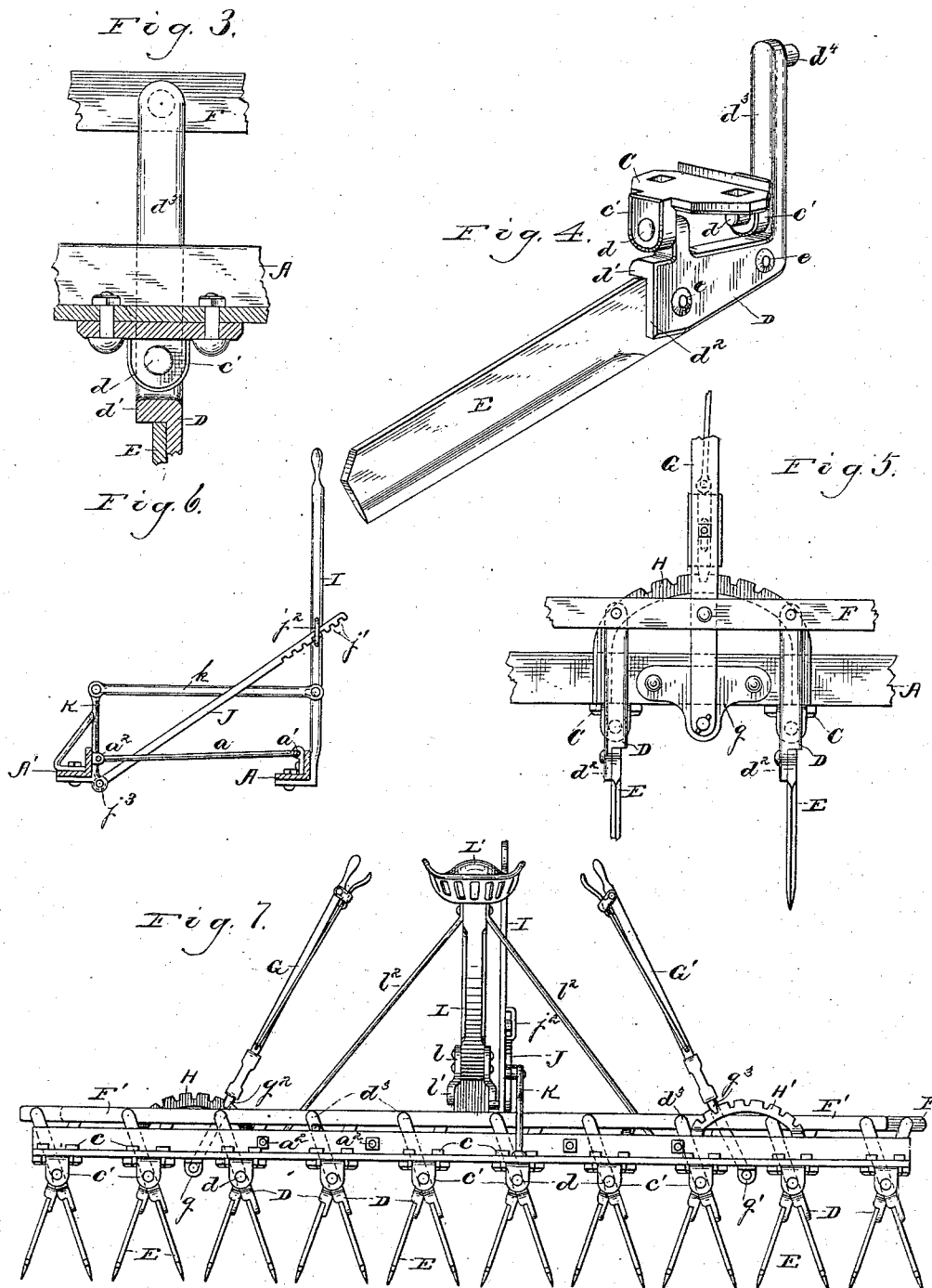
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Henry Frankfurter,
D. H. Gilchus.

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his Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM R. HINDS, OF WATERMAN, ILLINOIS.

SOIL-PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 305,591, dated September 23, 1884.

Application filed April 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. HINDS, of Waterman, in the county of De Kalb and State of Illinois, have invented a new and useful Improvement in Soil-Pulverizers, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view showing the knives of the machine in a vertical position. Fig. 2 is a side view of the same. Fig. 3 is a vertical longitudinal sectional view of a portion of said machine, taken upon the line *x x*, Fig. 1, viewed in the direction of the arrow there shown. Fig. 4 is a perspective view of one of the knives or cutters, showing the means by which the same is secured to the frame. Fig. 5 is a front detail view of a portion of said machine, showing the mechanism for adjusting or oscillating the cutters. Fig. 6 is a transverse sectional view of the frame-work of the machine with the cutters removed, showing a modification of the mechanism for adjusting the knives as to depth of cut; and Fig. 7 is a rear view of said machine, showing the manner in which the front and rear cutters are adjusted as to each other when in use.

Like letters of reference indicate like parts in the different figures.

The object of my invention is to provide a soil-pulverizer in which straight or substantially straight knives or harrow-teeth may be used for cutting the soil, the respective positions of which may be varied laterally to any extent and whenever desired, while at the same time they may be adjusted at will as to depth of cut. A further object is to provide a seat upon said machine which may be so adjusted as to cause the weight of the driver to bear upon any desired point, thus enabling said machine to be more perfectly balanced while in use, all of which will be hereinafter more fully described, and definitely pointed out in the claims.

In the drawings, *A A'* represent the frame-work of the machine, which consists of two transverse horizontal bars, preferably made of angle-iron, as shown, and coupled to each other by loose or hinged couplings *a a*, which I prefer to construct in a V shape, or in any form whereby the rear cross-bar may follow the other without lateral movement. Said

couplings *a a* connect with eyebolts *a' a' a' a'*, secured in the usual manner to said bars *A A'*. A tongue, *B*, provided with a cross-bar *b*, suitably braced, is hinged or connected with the cross-bar *A* by means of the eyebolts *b' b' b' b'*, or in any well-known manner.

Bolted to the horizontal flange of the cross-bars *A A'*, respectively, by means of bolts *c*, are a series of plates, *C*, each of which is provided with downwardly-projecting lugs *c' c'*, (better shown in Fig. 4,) forming pivotal bearings for a like number of clamp-plates or castings, *D*, which are provided with short arms or projections *d d*, adapted to fit loosely in holes in said lugs *c'*. Said castings are constructed with lateral and downwardly-projecting flanges *d' d'*, to the latter of each of which are secured by bolts *e e*, knives or cutters *E*, so adjusted thereto as to project downwardly or at an angle oblique to the plane of the horizon, substantially as shown in Fig. 2. Each of the plates *D* is provided with an arm, *d''*, which projects upward from the bearing or axis of said plate, and is provided with a pin, *d'*, extending outward therefrom. Said series of arms *d''* upon the respective cross-bars *A A'* are connected with each other by means of bars *F F'*, loosely pivoted to the pins *d'*, as indicated in the drawings, or connected therewith by bolts or screws in such manner that a longitudinal movement of either of the bars *F F'* will produce an oscillating or vibratory movement of the cutters *E* in a direction opposite to that of the movement of said bar. Thus it is obvious that by moving said bars the cutters connected with the same, respectively, may be moved laterally at any angle of obliquity to the cross-bars *A A'*. To control this movement and adjust or change the position of said cutters, as desired, at will, I have provided the following-described device: Levers *G G'*—the lower ends of which respectively are pivoted to lugs or plates *g g'*, Fig. 7, in the manner more clearly shown at *g*, Fig. 5, or to the cross-bars themselves—are pivotally connected with said bars *F F'*, respectively, as shown in said last-named figure. Concentric with said pivotal points in the lugs *g g'*, I place notched arch-bars *H H'*, which are rigidly secured by bolts or otherwise to the cross-bars *A A'*, respectively. The levers *G G'* are provided with the usual detents, *g' g'*, re-

tained in their normal positions in the notches of said arch-bars by springs in the usual manner, and operated by rods and hand-levers, as shown. Said levers G G' fully control said lateral movement of the cutters, as hereinafter more fully described. A lever, I, Figs. 1, 2, and 6, is bolted rigidly to the cross-bar A, as shown in Fig. 6, and extended upward therefrom, the same being detachably connected

with the tongue B by a bar, J, Figs. 1 and 2, which is pivoted to said tongue at *j*. The upper end of said bar is curved and provided with notches *j'*, adapted to engage with a staple, *j''*, upon the side of the lever I, which serves as a guide for the bar J, and through which the latter passes. The opposite end of the bar J has an upward projection or foot-rest, *j'''*, Fig. 2, by means of a pressure upon which the notches *j'* may be disengaged from the staple *j''*.

Projecting upward from the cross-bar A', and rigidly secured thereto, is a bar or bracket, K, the top of which is pivotally connected by means of a link, *k*, to the lever I at a distance upward from the cross-bar A corresponding to the length or upward extension of said bar or bracket K, or thereabout, thus causing the link *k* and the coupling-links *a a* to be horizontally parallel with each other, or substantially so.

When the tongue is maintained at the usual height at which it is held when in use, the cutters E should stand obliquely to the ground, somewhat as shown in Fig. 2. By moving the lever I backward or forward, this position may be varied and the angle of obliquity of the cutters increased or diminished at will, and as the links *k* and *a* and the lever I and bracket K move in parallel lines with each other, it is obvious that any movement of the bar A through the lever I must produce a corresponding movement in the bar A', and thus the changes in the movement of the cutters upon said respective bars are necessarily uniform. The movement of the lever I produces a rocking movement in the bars A A', a forward movement serving to reduce the depth of cut, while a backward movement tends to increase it.

It is obvious to one skilled in the use of this class of machines, that the same may be adjusted and used without as well as with a seat, though I prefer the use of one, which may be constructed as follows: An inclined supporting-bar, L, provided with straps *l l* bolted thereto at its lower end, is pivoted, by means of a bolt, to the tongue at *l'*, the seat L' being secured in the usual manner to the top of said bar. Braces *l'' l''* are pivotally bolted to the bar L near said seat, as shown, while the lower ends of said bars are adjustably secured to the coupling-links *a a* by means of the bolts *l''' l'''*, the tightening or loosening of which serves to tighten or loosen the pressure of the loops in the ends of said bars

upon said links, whereby the former may be moved to any position upon the latter, thus enabling the weight of the driver to bear at any point required. It is manifest that the seat, while thoroughly braced, will automatically adjust itself to the changes in the rocking movement of the bars A A' produced by the action of the lever I. The levers I and G G' are within easy access from the seat L', and may be readily moved while the machine is in operation.

By reference to Fig. 7, it will be seen that by drawing the levers G G' toward each other a lateral inclination may be given to the respective series of cutters in opposite directions, by which means the cutters upon the cross-bar A' may be made to follow and cultivate the ground in the spaces left by the cutters upon the bar A.

It is apparent that the relative inclination of the two series of cutters should be the same at all times, in order to produce a rectilinear movement of the machine. Should said cutters become clogged, a movement of the levers while the machine is in use will serve to clean and free them from obstruction, when they may be again adjusted as before, without stopping the machine.

As a modification of the means for producing the rocking movement described for varying the depth of said cutters, the bar J, instead of being pivoted to the tongue at *j*, may be pivoted to a lug, as at *j'''*, Fig. 6, upon the bottom of the cross-bar A', and extended upward to connect with the loop *j''*, as shown, in an opposite direction from that above set forth.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a soil-pulverizer, the combination of the cross-bars A A', hinged couplings *a a*, pivoted cutters E, castings D, having arms *d''*, united by rigid bars F F', levers G G', for reciprocating said bars, bracket K, lever I, and bar J, all constructed and operating substantially as and for the purposes set forth.

2. The combination, in a soil-pulverizer, of double cross-bars flexibly connected with each other by means of links hinged thereto at their respective points of juncture, a suitable tongue, pivoted cutters upon said cross-bars adapted to move laterally, a lever secured rigidly to one of said cross-bars and having a link-connection with a bracket extending upwardly from the other, and means for locking said lever in a fixed position, whereby a uniform rocking movement may be given to said cross-bars in their adjustment, and the position of said knives varied at will to cut deep or shallow, substantially as described.

WILLIAM R. HINDS.

Witnesses:

MARY HINDS,
CARLOS W. HINDS.