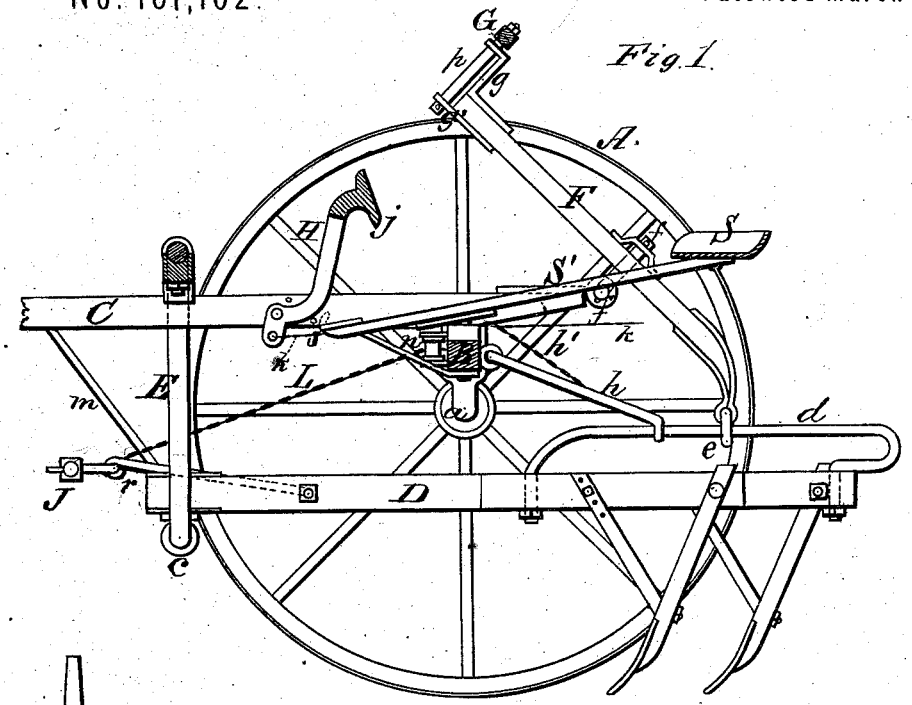
2 Sheets--Sheet 1.

W. P. DALE.

Wheel-Cultivator.

No. 161,102. Patented March 23, 1875.

Fig. 1.



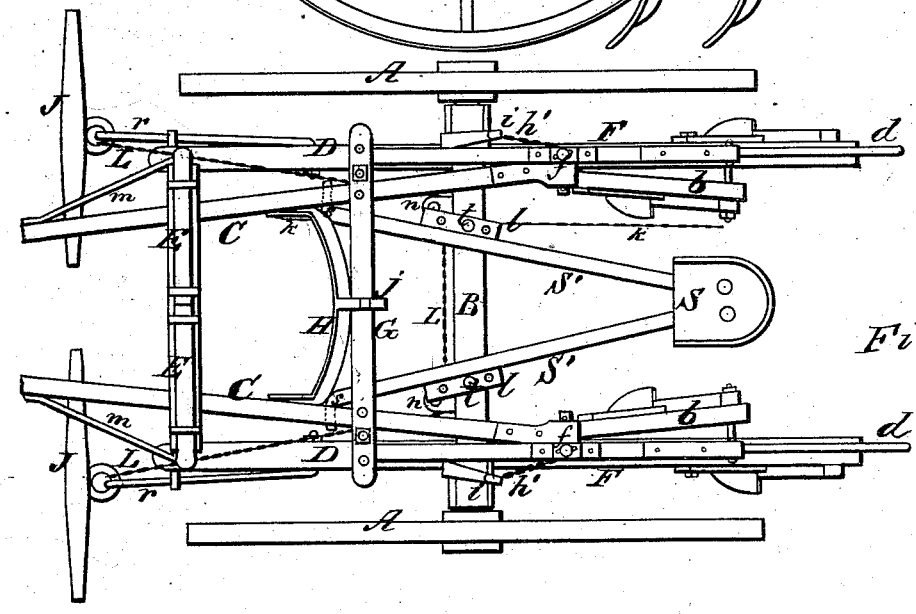


Fig. 2.

WITNESSES

E. H. Bates

Robert Everett

INVENTOR

William P. Dale,

Chipman & Fosmer & Co

Attorneys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

W. P. DALE.

Wheel-Cultivator.

No. 161,102. Patented March 23, 1875.

Fig. 3.

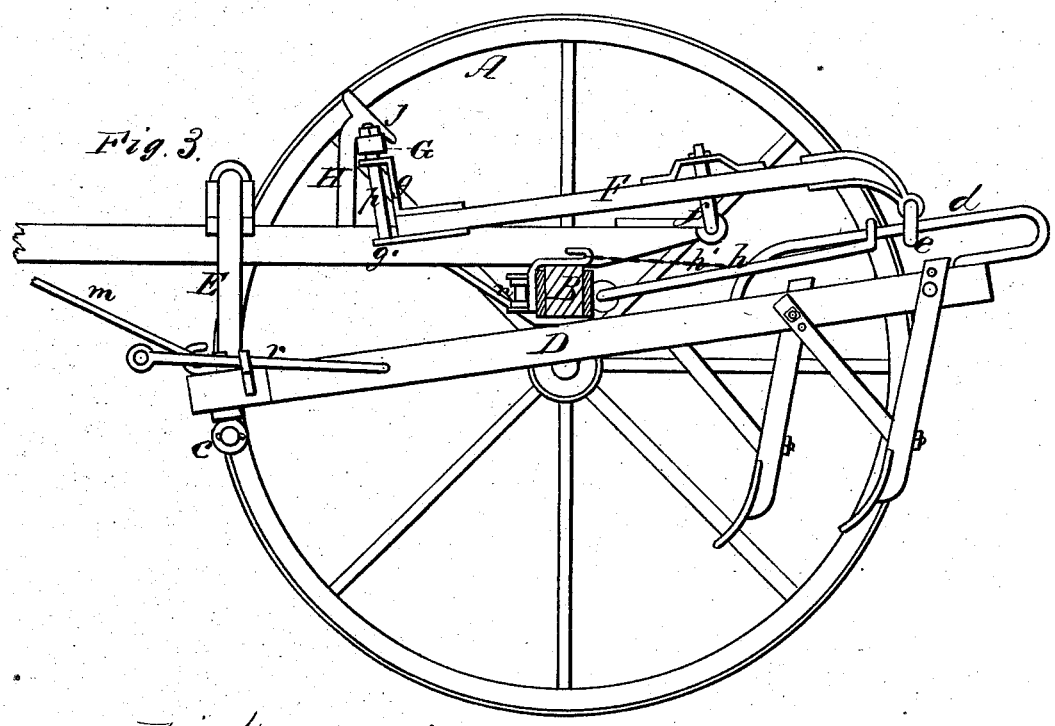


Fig. 4.

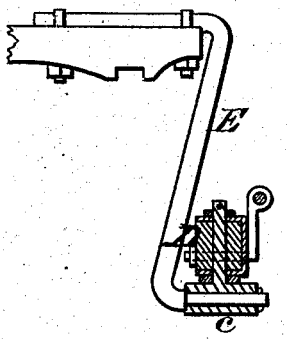


Fig. 5.

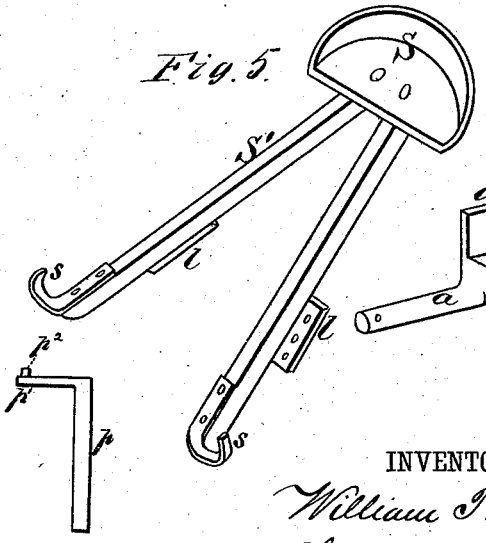
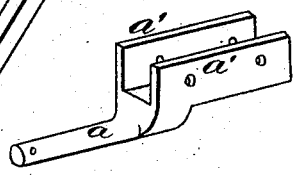


Fig. 6.



WITNESSES

E. H. Bates

Robert Everett

INVENTOR

William P. Dale

Chipman & Fosmire & Co

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM P. DALE, OF PENNSYLVANIA STATE COLLEGE, PENNSYLVANIA.

IMPROVEMENT IN WHEEL-CULTIVATORS.

Specification forming part of Letters Patent No. **161,102**, dated March 23, 1875; application filed August 29, 1874.

To all whom it may concern:

Be it known that I, WILLIAM P. DALE, of Pennsylvania State College, in the county of Centre and State of Pennsylvania, have invented a new and valuable Improvement in Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical sectional view of my cultivator. Fig. 2 is a top view, Fig. 3 is a side view, and Figs. 4, 5, and 6 are detail views, of the same.

This invention has relation to cultivators wherein an independent draft is allowed, but which can be converted into stiff-draft machines when desired; and it consists in certain novel contrivances, hereinafter explained, for accomplishing the above-named objects, together with means for allowing a person riding on the machine to guide the shovels along the rows, and to regulate the depth for running the shovels. I have also made provision for tightening up the joints at the front connections of the shovel-carrying beams, so as to keep the shovel-standards from tilting laterally; and I have also provided an adjustable seat-support, in combination with backwardly-diverging hounds and a hand-bar, whereby the machine can be adjusted for a large or small person, to enable him to conveniently manipulate the shovels, all of which will be fully understood from the following description.

In the annexed drawings, A A designate transporting-wheels, which are applied on spindles *a a*, bolted, by means of their flanges *a' a'*, to the ends of the axle B. The flanged portions of the axle-spindles afford great strength to them, and firmly support the axle. C C designate backwardly-diverging hounds, which are rigid with the draft-tongue, and which are secured on top of the axle, extending a short distance in rear thereof, as shown in the drawings. D D designate shovel-carrying beams, to which the rear shovel-standards are secured in the usual manner. The front shovel-standards are secured to short pieces *b b*, which are rigidly but adjustably secured to the beams D. This allows the front shovels to be adjusted nearer to or farther from the rear shovels, as may be desired. The front ends of the beams D D are connected to the lower ends of longitudinally-vibrating arms E E by vertical and horizontal joints, which arms have their bearings on a cross-bar, which is secured on the hounds, and are movable independently of each other. The jointed connections of beams D D to the lower ends of arms E E are formed by means of T-shaped pieces *c*, the tubular portions of which receive the short right-angular ends of the arms E E, and the solid portions pass vertically through the ends of beams D, as shown in Fig. 4. The lower ends of arms E and the solid portions of the pieces *c* are made tapering, so that they can be set up when the joints wear loose, thereby allowing the joints to be kept properly tight and preventing wabbling. On top of the beams D D long staples *d d* are secured, which receive loosely links *e e*, which are connected to the rear ends of two arms, F F. These two arms F F are connected by right-angular joints *f f* to the rear ends of the hounds C, which joints will allow the said arms to be vibrated laterally and vertically. The front ends of the arms are connected together by means of a hand-bar, G, by means of which the attendant, sitting in a seat, S, can have full control over the shovels, and guide and raise or lower them, as he may desire. There are two perforated brackets, *g g'*, secured to the front end of each arm F, adapted to receive a long pin, *p*, which is rigidly secured to each end of the hand-bar G.

When pins *p p* are inserted through the upper and lower brackets *g g'* the shovel-beams, the arms F F, and the hand-bar G will all move together; but when the pins *p p* are raised out of the lower brackets *g' g'*, the parts are allowed shackle movements, and the shovel-beams can rise and descend independently of each other.

The pins *p* have right-angular heads p^1 on them, on which studs p^2 are formed, so that when these pins are bolted to the hand bar G they will be rigidly held. Several bolt-holes are made through the bar G, for allowing the pins *p* to be adjusted for setting the shovels nearer to or farther from each other. It will be seen from the above description that the

several jointed connections allow the attendant to give any desired movement to the shovels while they are moving along the rows of plants; also, that the shovel-carrying beams are allowed to receive free longitudinal movements, for a purpose hereinafter explained. With certain kinds of soil it is desirable to keep the shovels from running too deep, and to do this without labor on the part of the attendant I employ rods *b*, which are loosely attached to eyes fixed to the back part of the axle B, and also connected by eyes to the long staples *d d*. To these rods chains *h'* are attached, which are fastened to hooks *i* on top of the axle B. By these simple means the shovels can be held to run at any given depth. H designates an arched holder, which is pivoted between the hounds in such a position relatively to the hand-bar G that when the shovels are raised a T-shaped hook, *j*, will catch over the hand-bar and hold up the shovels, as shown in Fig. 3. A rope or chain, *k*, is attached to the lower end of one of the legs of holder H, and carried back to the rear end of the machine, for the purpose of allowing a person walking behind the machine to release the holder H from the hand-bar, and drop the shovels into working position. When the attendant rides on the machine he can detach the bar G from the holder by pressing the latter forward with his feet or hands. The seat S is pivoted to the upper ends of two supports, S' S', having hooks *s s* on their lower ends, which hooks are adapted to reach under the two hounds C C, and hold down the front ends of the supports. The rear portions of the supports rest upon the axles, and have plates *l l* secured to them, which are perforated at several places to receive pins *t t*, fixed into the axle, which pins prevent displacement of the supports S'. The several perforations in plates *l* allow the seat to be adjusted so that a tall or short person can conveniently use the hand-bar G. The single-trees J J, to which the horses are hitched, are connected to eyes on the ends of short draft-rods *r r*, which rods are firmly secured to the front ends of the shovel-carrying beams D D, so that each horse is hitched to one of these beams. L designates an equalizing-chain, which is passed around two pulleys, *n n*, on the front side of the axle, and connected by its front ends to the single-trees, or to the front ends of the beams D D, so that the animals pull from the axle through the medium of the chain. By this arrangement of the parts the animals will draw equally on the machine, and in case the shovels meet with obstructions each pair of shovels can give back independently of the other, and without causing lateral thrust on the machine.

Should the farmer desire a stiff machine he can secure the beams D D against endwise movement by fastening their front ends to the hounds C by means of rods *m m*. The single-trees J can be adjusted higher or lower, as may be required, by raising or lowering the front ends of the draft-rods.

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

1. In combination with hinged or pivoted shovel-carrying beams D D, the vertically and laterally vibrating arms F F, connected together at their front ends by means of a hand-bar, G, substantially as described.

2. Beams D D, connected by joints C C to longitudinally-vibrating arms E E, having independent bearings on the hounds C, substantially as described.

3. The supports S' S', pivoted to the seat S, and having hooks *s s* on their ends, in combination with plates *l l* and hounds C C, as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM P. DALE.

Witnesses:

H. C. HOLLINGSHEAD,

F. J. MASI.