

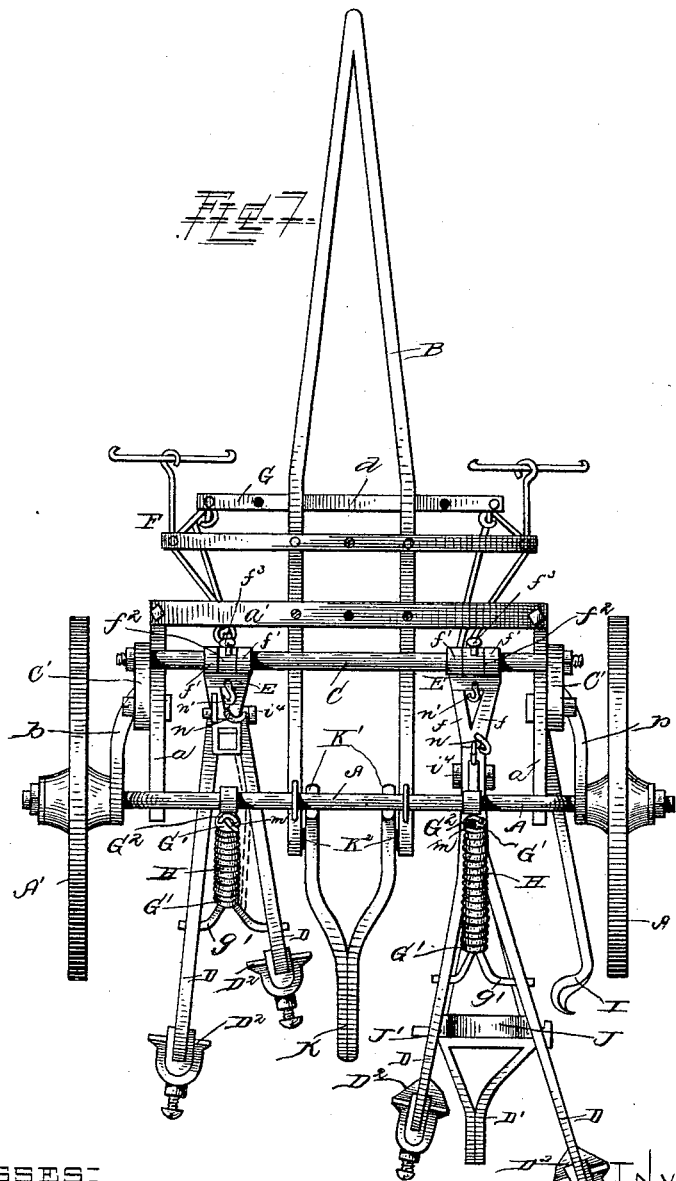
(No Model.)

4 Sheets—Sheet 1.

D. D. FUNK.
CULTIVATOR.

No. 348,518.

Patented Aug. 31, 1886.



WITNESSES:

Howard J. Schmidt

Thos. F. Appell

INVENTOR:

Daniel D. Funk
By *[Signature]*
ATTORNEYS

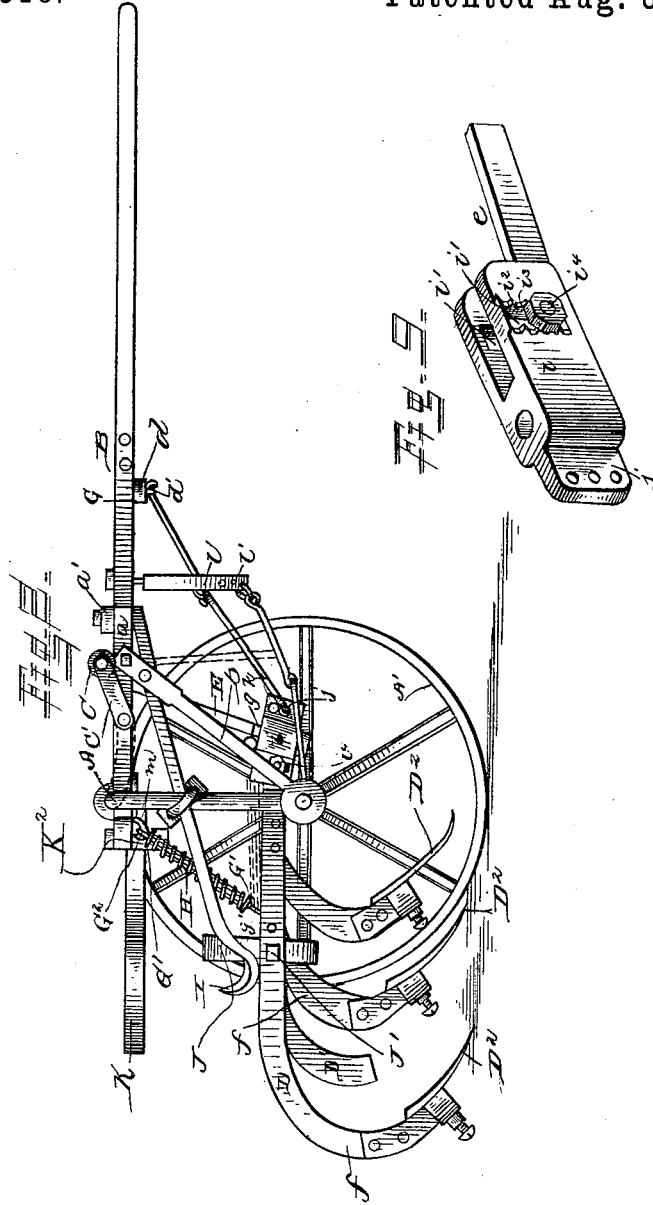
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4 Sheets—Sheet 2.

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CULTIVATOR.

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WITNESSES:

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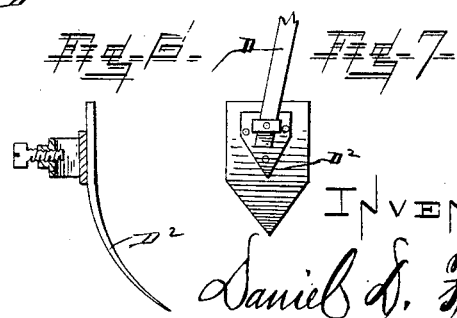
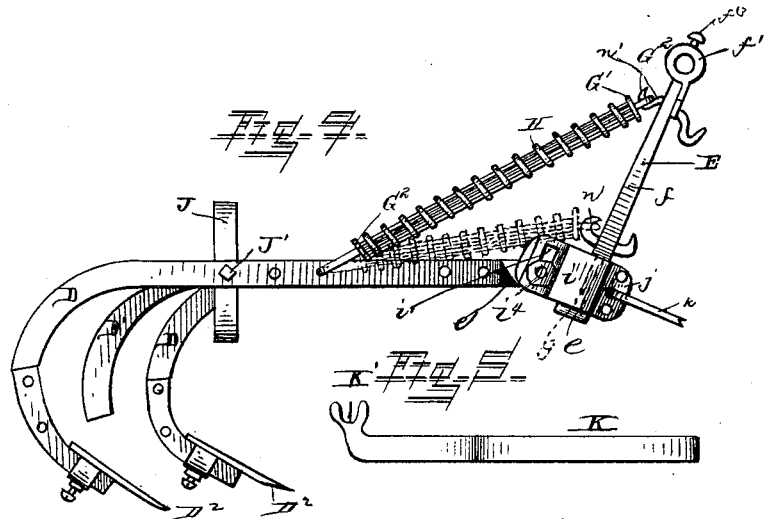
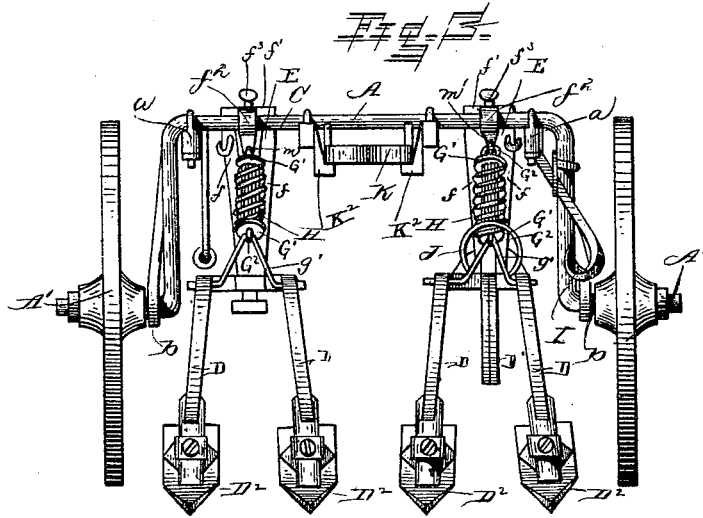
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No. 348,518.

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WITNESSES:
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 " "
Thos J. Appell.

INVENTOR:
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(No Model.)

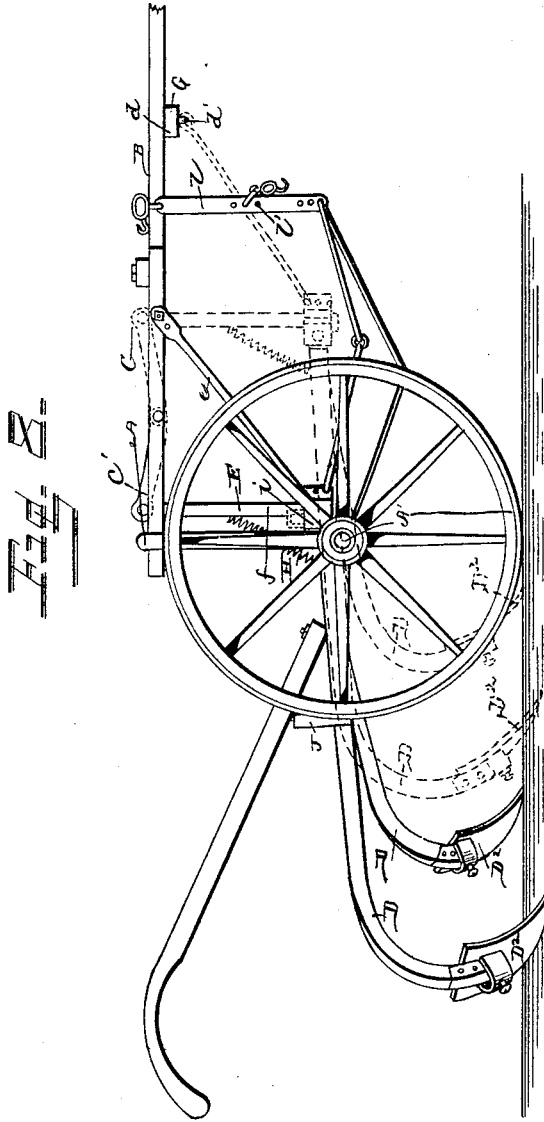
4 Sheets—Sheet 4.

D. D. FUNK.

CULTIVATOR.

No. 348,518.

Patented Aug. 31, 1886.



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UNITED STATES PATENT OFFICE.

DANIEL D. FUNK, OF GREENVILLE, ASSIGNOR OF ONE-HALF TO J. W. LEHR
AND N. P. LEHR, OF FREMONT, OHIO.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 348,518, dated August 31, 1886.

Application filed May 12, 1886. Serial No. 201,967. (No model.)

To all whom it may concern:

Be it known that I, DANIEL D. FUNK, a citizen of the United States of America, residing at Greenville, in the county of Darke and State of Ohio, have invented certain new and useful Improvements in Cultivators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention pertains to improvements in combined riding and walking cultivators, having for its object, among other things, to promote convenience in handling or working the cultivator, as also to facilitate the adjustment of the shovel-beams to the depth of cultivation, as well as to provide for the direct application and equalization of the draft upon the cultivator-shovel beams and to permit of the ready convertibility of the implement, according as it may be desired to use it as a walking or as a riding cultivator.

The invention therefore consists of the combinations of parts, including their construction, substantially as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my improved combined riding and walking cultivator. Fig. 2 is a side elevation thereof with one of the wheels removed. Fig. 3 is a rear elevation of the same. Fig. 4 is a detached view of a cultivator-beam and its suspending contrivance or hanger and spring. Fig. 5 is a similar view of the seat-supporting bracket or bar. Fig. 6 is a partly-sectional side view of shovel, showing the angling position in which the eye or socket is placed on shovel to permit of placing the latter perpendicularly in the same plane and equally in the ground. Fig. 7 is a detail rear view of shovel. Fig. 8 is a side elevation of the machine used as a riding-cultivator; and Fig. 9 is a detail view, in perspective, of the clevis.

In the organization of my invention I employ the cranked or bail-shaped axle A, with its short arms bearing wheels A' A'. To the upper horizontal portion of the axle A, upon its under side, are secured by clips or staple-shaped bolts the rear ends of two side bars, *a a*, to or upon the forward ends of which are secured or bolted the ends of a cross-bar, *a'*,

which axle and cross and side bars are all the parts that constitute the frame of my cultivator. The axle and side bars, *a a*, are further connected or braced together by diagonal rods or braces *b*, the lower ends of which, having eyes, are fitted upon the axle-arms, and are bolted at their upper ends to the said side bars, near the forward ends of the latter.

B is the tongue, which is preferably formed of two parts converging at their forward united ends and diverging toward and at their rear ends, the same being bolted or fastened to the under side of the axle A and the front cross-bar, *a'*, the extreme rear ends of said parts of the tongue projecting a short distance beyond the axle, the purpose of which will appear further on.

To the under side of the tongue B is secured, a short distance from the front end or bar, *a'*, of the frame aforesaid, a bar, *d*, and depending from the ends of said latter bar, *d*, are hooks *d'*, the function of which will be disclosed in connection with the description of other parts, as hereinafter described.

C is a rod or support adapted to rest upon the side bars, *a*, and with its ends secured to the upper ends of arms or bars *C'*, the opposite ends of which arms or bars *C'* are pivoted to the side bars, *a a*, whereby the rod or support C can be shifted in the arc of a circle or semicircular plane, as relates to its points of bearing upon the latter, nearer to or farther from the axle, similarly affecting the relative arrangement of the inner ends of the cultivator-shovel beams to the said axle, to which support or rod C said beams are connected, as will be explained hereinafter. By means of this shifting bearing or contrivance the cultivator-shovel beams can be brought well under the seat-supporting frame, to enable the rider to apply his feet to the beams at points thereon that will most effectively transmit the pressure thereof to the shovels to hold the latter to their work; also, by means of this shifting contrivance or connection between the frame and cultivator-shovel beams, the latter can be moved rearward, nearly wholly from under the frame, as is obvious is desirable in operating the implement as a walking-cultivator, and whereby the

weight is removed from the tongue, the rear ends of the said beams being thus sufficiently removed from the running-gear and frame to give the operator walking behind or following the same ample room for handling or working the beams, which would otherwise not be had.

DD are the cultivator-shovel beams, in their general construction similar to those now mostly in use, differing, however, therefrom in their adaptability to receive springs and third shovels, as will be described further on. These beams are preferably secured together in pairs, and between the beams of a pair is disposed an eye bar or plate, *e*, which will be referred to further on.

EE are hangers, each of which is preferably made of two bars, *f*, provided at their upper divergent ends with a uniting eye-plate, *f'*, which receives the rod C of the shifting contrivance C C', effecting a connection between the latter and the hangers. One of the eye-plates *f'* is slotted in or through its eye portion, as may be also the other eye-plate, to receive a collar, *f''*, slipped or inserted upon the rod C of the shifting contrivance C C', which collar has an adjusting and holding screw, *f'''*, to permit of the lateral adjustment and retention of the hangers with the cultivator-shovel beams. The lower ends of the hangers E are each provided with a cylindrical or bolt-like extension, *g*, the free end of which is fitted with a nut. The bolt-like extension *g* is loosely fitted with a clevis, *i*, which is adapted to receive the eye bar or plate *e*, disposed between the cultivator-shovel beams, and which is provided in its cheeks with coincident slots *i'*, one of which has at its outer side edges serrations or notches *i''*, preferably formed in raised surfaces or bosses *i'''*, cast upon said clevis. Through these slots is inserted an adjusting-bolt, *i''''*, also passing through the eye or aperture of the eye bar or plate *e*, to effect an adjustable connection with each cultivator-shovel beam to provide for the raising and lowering of the forward ends of the said beams, according as it may be desired to vary or regulate the angle of the entrance of the cultivator-shovel into the ground. Each clevis *i* is provided at its forward end with a serially perforated or apertured extension or plate, *j*, to each of which is adjustably connected one end of chains *k k*, the opposite ends of which, when the implement is used as a walking-cultivator, are connected to the lower ends of the dangling arms *l* of the equalizer F, or farther up thereon, the same having a series of adjusting apertures or perforations, *l'*. The equalizer F is centrally pivoted upon a cross-piece secured between bars of the tongue. This arrangement provides for the direct application of the draft to the cultivator-shovel beams, and for its equalization, however much the pulling capacity of the animals may differ.

In using the implement as a riding-cultivator the chains *k k* are disconnected from the equalizer-arms and connected to the ends of

a rigid cross-bar, G, fixed to the under side of the parts or bars of the tongue, and having hooks at its ends for the convenient attachment of said chains thereto. The required down-pressure is obtained by this means to balance the weight of the rider in position upon the implement.

HH are compound or double-acting springs, which additionally connect the cultivator-shovel beams to the frame of the implement. The said springs have each a disk or plate, *G'*, applied at each end upon the outside, and to each disk is fastened one end of a U-shaped or staple-like bar, *G''*, which passes through that disk or plate to which its fellow bar is fastened, said bars being reversed end for end, with their arched or bow-shaped portions arranged outside of the said disks or plates. One bar *G''* is connected to a pair of cultivator-shovel beams by means of a bail, *g'*, inserted through the external bow-shaped portion of the bar and into apertures of the said beams. The upper or bow-shaped portion of the other bar *G''* is hung or caught upon a hook, *m*, depending from the elevated horizontal portion of the axle, in using the implement as a riding-cultivator. These springs may also, through the bow-shaped upper end of the bars *G''*, be connected to a hook, *n*, upon each hanger E, near its lower end, or to a hook, *n'*, applied to each hanger near its upper end, the latter adjustment being especially desirable in regulating the depth of penetration of the shovel or plows for cultivation in sod or for the first time in going over the soil. It is obvious that the spring-connection between the beams and the frame will permit of the gaging of the depth of penetration of the shovels or plows. By the operator exerting greater or less pressure upon the beams they will accordingly be forced into or caused to enter the ground a greater or less depth, and as pressure is removed therefrom they will be automatically lifted out of the ground; also, they aid the operator in guiding the machine and prevent the tongue or frame from colliding with the fence.

I is a bracket, which is a bar fastened at one end to the under side of the frame side bars, *a*, and extending downwardly and rearwardly, and has its rear lower end curved or of a hook shape, for convenience in supporting the shovel-beams when elevated out of the ground or use. A duplicate of this curved or hooked bracket may be applied to the opposite side of the machine to similarly hold the beams next to that side of the machine. To each pair of cultivator-shovel beams may be applied a double foot-stirrup, J, for the rider, which stirrup is made or cast with an upper and a lower foot-receiving opening to accommodate the length of the rider's leg in applying pressure therethrough to the beams. The stirrup is secured centrally of its openings by a pin or bolt, *J'*, passed through the beams and the middle solid portion of the stirrup. A third supplementary beam, D', may be em-

ployed, if desired, the same being disposed between the beams of one or both pairs of the beams D, its divergent ends being bolted to the inner sides of said beams and interposed
 5 between the latter and the stirrup J, said supplementary beam having apertures, through which passes the securing or connecting bolt or pin J' of the stirrup J. These beams, in
 10 practice, are each provided with a shovel or plow, D², having connection therewith by an eye attached at a certain angle to the plow or shovel, for the purpose of placing it squarely to the ground and in line of draft with sulky.

K is the seat-bracket, which consists of a two
 15 armed or pronged bar, its arms or prongs being preferably made in one piece therewith, the same being preferably formed of a single piece bent or folded upon itself a short distance in the direction of its length, and the
 20 two parts into which it is thus converted curved outward and rearward the rest of their lengths, providing the arms or prongs aforesaid. These arms are provided at their free
 25 ends with upwardly-projecting sockets K', of oar-lock form, which in practice rest against the under side of the elevated portion of the axle A, and upon the inwardly-projecting portions of right-angled pendent lugs K², fastened to
 30 of the tongue B. The bar is retained in this position by the preponderant weight of the forward end thereof, and the seat secured to said bar.

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

1. The combination, with the frame having the bail-shaped axle and the side and front bars, of the horizontal rod and rocking arms
 40 pivoted to said side bars composing the shifting contrivance, and the hangers for the cultivator-shovel beams secured on said horizontal rod, and having slotted eye-plates and a collar provided with a screw, substantially as
 45 shown and described.

2. The combination, with the hangers con-

sisting of the two bars having uniting eye-plates and a nutted bolt-like extension, of the clevis having coincident slots and the eye bar or plate of the cultivator-shovel beams, said
 50 clevis and eye bar or plate being connected by an adjusting-bolt, substantially as shown and described.

3. The combination, with the hangers and the cultivator-shovel beams, of the clevis having
 55 two cheeks provided with coincident slots, and a serially-perforated extension or plate and the adjusting-bolt, one of said cheeks having on its outer side edges serrations or notches, substantially as shown and described.
 60

4. The combination, with the hangers having the bolt-like extension, the clevis secured thereon, and the cultivator-shovel beams pivotally secured to said clevis, of the compound
 65 or double-acting springs connected at one end to said hangers and at the other to a bail of said cultivator-shovel beams, substantially as shown and described.

5. The combination, with the shifting contrivance and the hangers connected thereto,
 70 and having at their lower ends bolt-like and nutted extensions, of the shovel or plow beams having vertically-adjustable connections with the said bolt-like and nutted extensions of the hangers, substantially as and for the purpose
 75 set forth.

6. The combination, with the hanger suspended from the shifting contrivance and provided at its lower end with a bolt-like extension,
 80 of the shovel or plow beam having an eye bar or plate, and the slotted clevis loosely fitted upon said bolt-like extension of the hanger, and provided with notches or serrations upon the outer edges of its slot, together with an adjusting-bolt, substantially as and for
 85 the purpose set forth.

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

DANIEL D. FUNK.

Witnesses:

NICHOLAS P. LEHR,
 MORRIS E. TYLER.