(No Model.)

2 Sheets—Sheet 1.

F. R. PACKHAM.

CULTIVATOR.

No. 446,563. Patented Feb. 17, 1891.

Fig. 9.

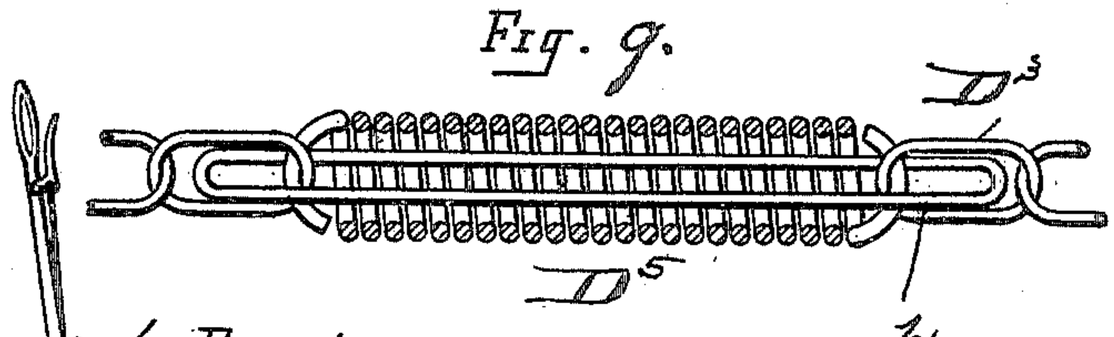


Fig. 1

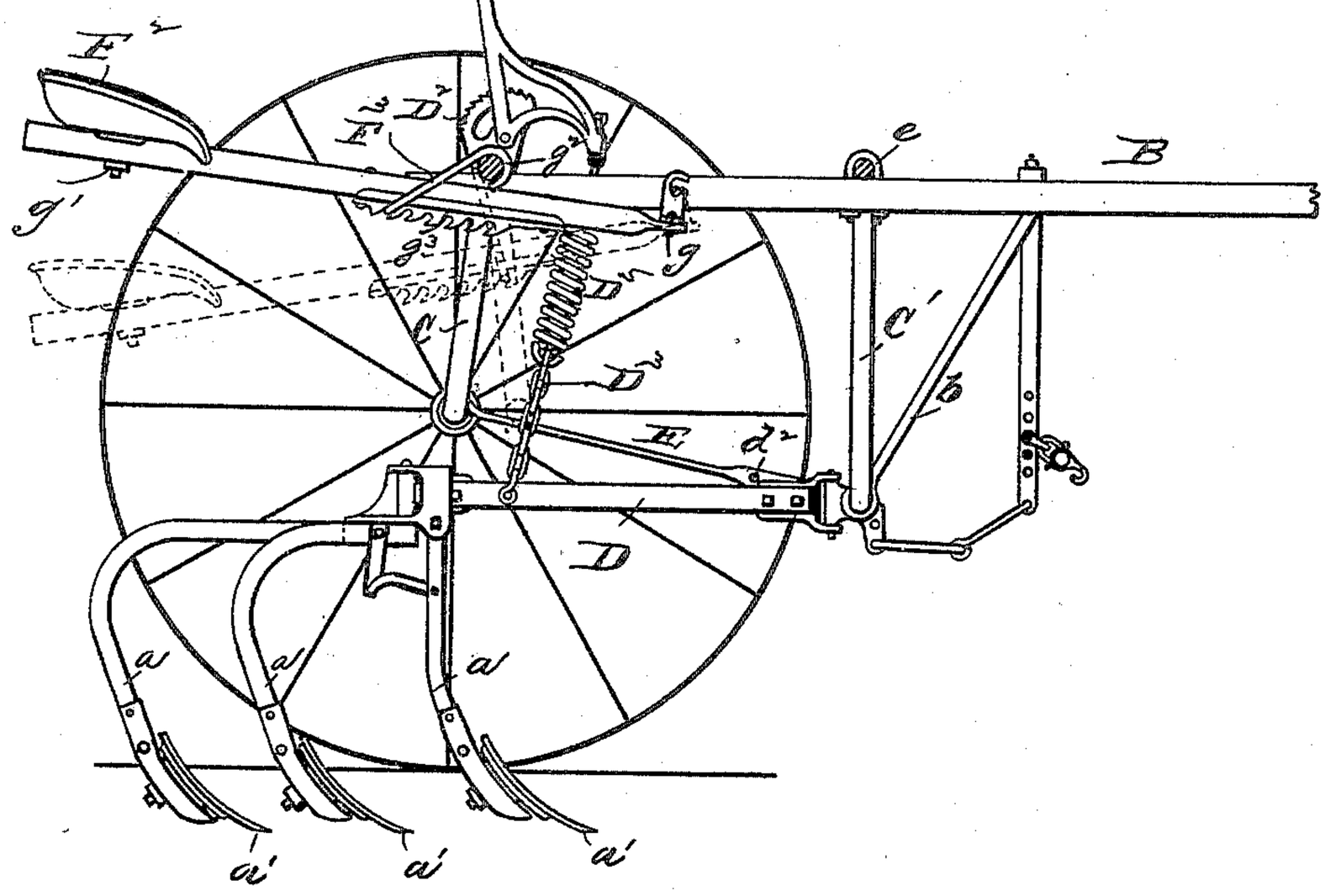


Fig. 7.

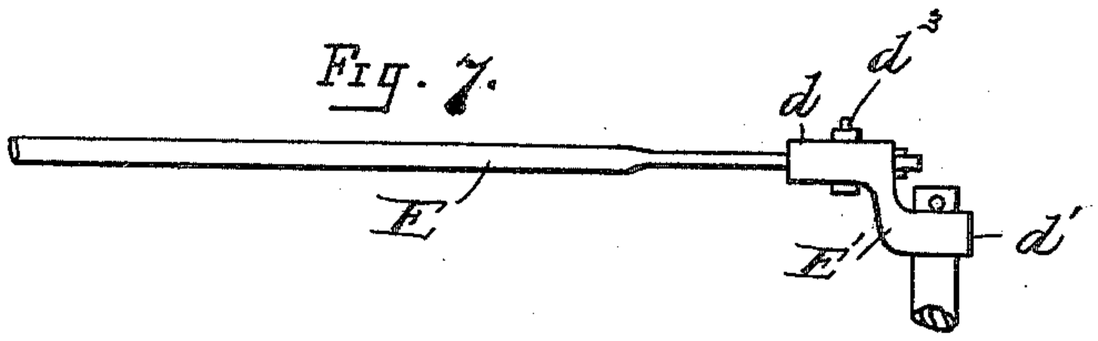
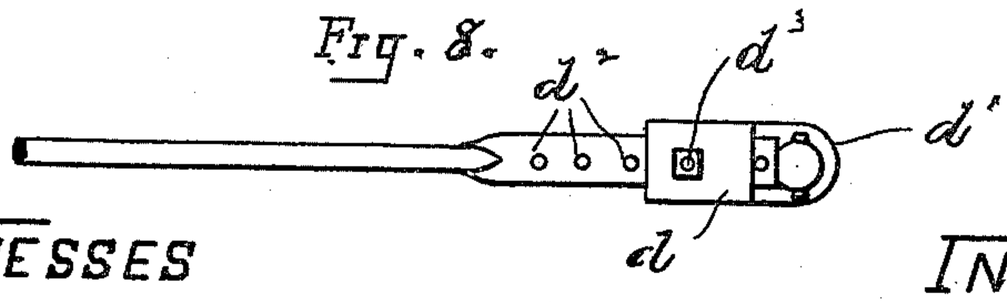


Fig. 8.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

F. R. PACKHAM.

CULTIVATOR.

No. 446,563. Patented Feb. 17, 1891.

Fig. 2

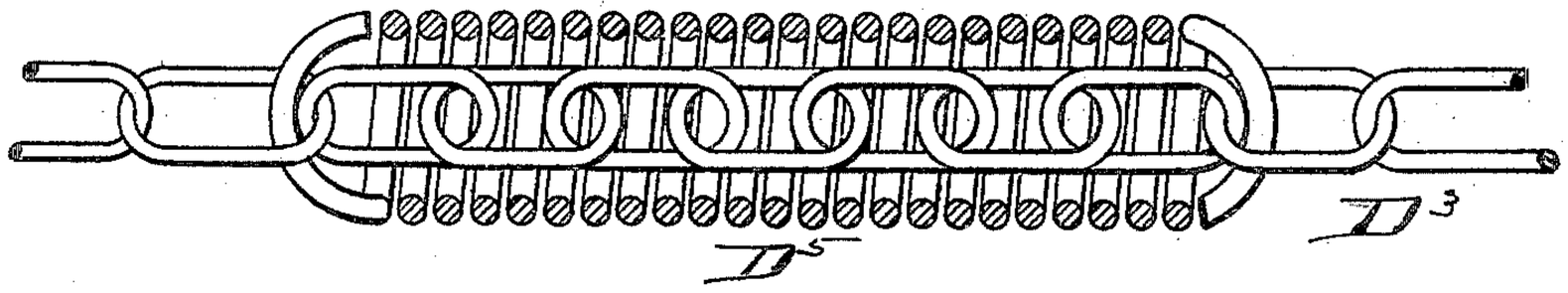


Fig. 3

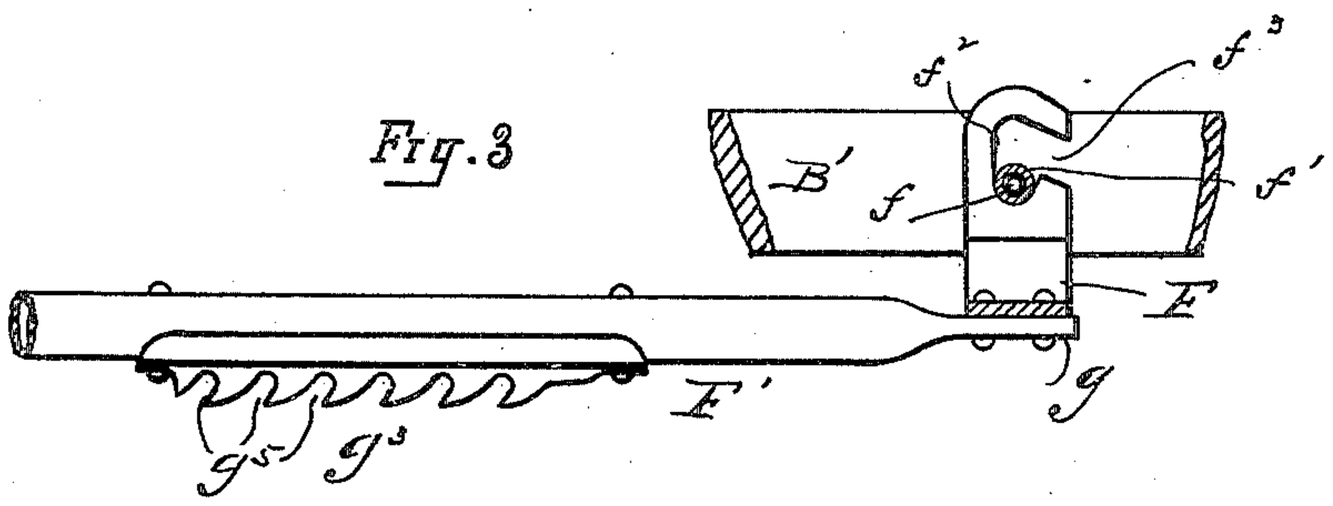


Fig. 4

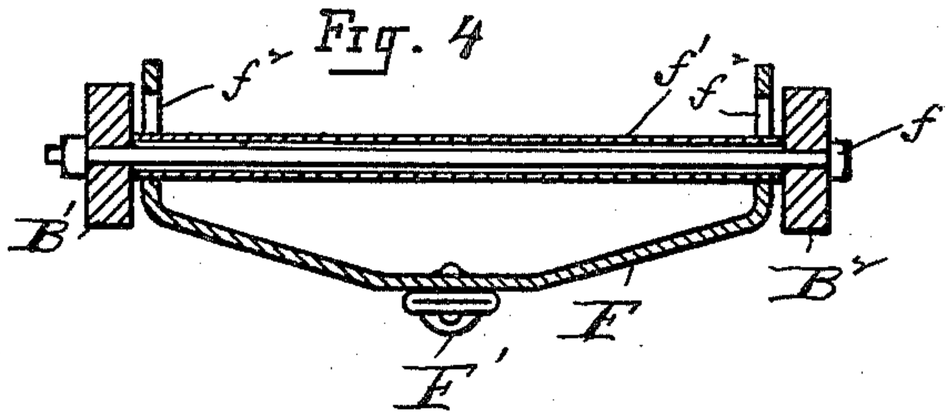


Fig. 5

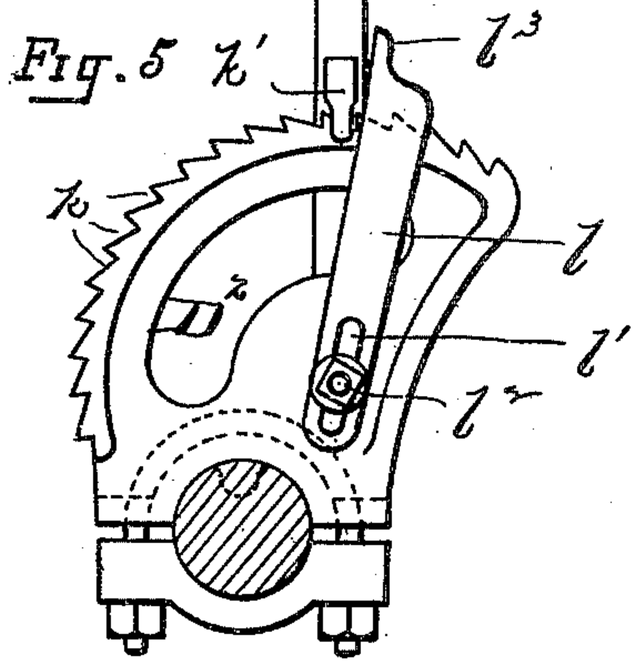
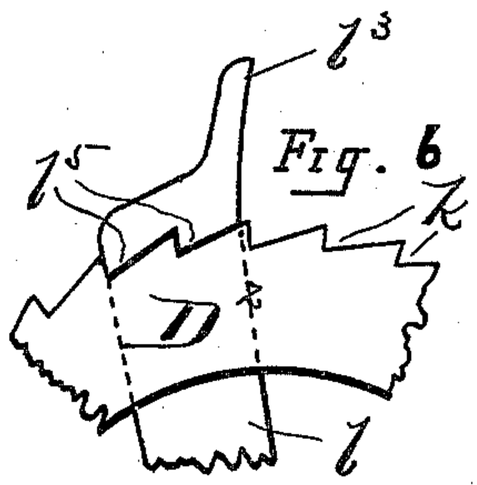


Fig. 6



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANK R. PACKHAM, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE SUPERIOR DRILL COMPANY, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 446,563, dated February 17, 1891.

Application filed February 21, 1890. Serial No. 341,330. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. PACKHAM, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

My invention relates to improvements in cultivators.

The object of my invention is to provide a novel arrangement of the raising and lowering mechanism for raising and lowering the cultivator beams and shovels and adjusting the depth of the same.

A further object of my invention is to provide a novel and convenient seat-support and seat for the operator or driver of the cultivator.

A further object of my invention is to provide a novel arrangement of parts whereby an adjustment of the operating parts and the seat-support may be secured with reference to the wheels to compensate for the weight of the operator or driver.

My invention consists in the various constructions and combinations of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation view of a cultivator embodying my invention. Fig. 2 is a detailed view of a portion of the raising and lowering mechanism. Figs. 3 and 4 are details of the seat-support. Figs. 5 and 6 are details of a portion of the raising and lowering mechanism. Figs. 7 and 8 are detailed views of the adjustable parts for securing the adjustment with reference to the supporting-wheels. Fig. 9 is a detailed view showing a modification in the construction of the raising and lowering mechanism and its yielding connection.

Like parts are represented by similar letters of reference throughout the several views.

In the said drawings, A represents one of the carrying-wheels, it being understood that two are used in the ordinary manner.

B is a tongue, which is connected to and supported in the usual manner from the carrying-wheels A by means of a yoke or crank-axle C, on which the carrying-wheels are journaled.

In front of the main supporting-yoke C is a second yoke C′, also connected to the tongue B and adapted to support and form a connection for the beams D, which carry the shovel-standards and shovels *a* and *a′* in the usual manner. The main supporting-yoke C is pivotally connected to the tongue B and is adapted to turn with reference to said tongue, as well as in the hubs of the carrying-wheels A, so as to assume different angular positions with reference to said tongue, as indicated in dotted lines in Fig. 1. The yoke C′, however, is secured rigidly to the tongue by a brace *b* and is adapted to remain in the same angular position. The tongue and the beam-supporting mechanisms, as well as the beams and shovels, are thus permitted a longitudinal movement forward and back with reference to the carrying-wheels.

Connected rigidly at one end to the main supporting-yoke C and extending forward to the yoke C′ is an adjustable connecting-link E. This connecting-link E is adapted to be adjustably secured to a casting E′, provided at one side with a sleeve portion *d*, adapted to receive the end of said connecting-link E, and at the other side with a boss or hub *d′*, adapted to fit on the trunnion or end of the yoke C′. (See Fig. 8 for detail.) The connecting-link E is provided with a series of holes d^2, adapted to receive a bolt or connecting-pin d^3, which passes through said openings and the sides of the sleeve *d*, and thus secures the said link in different positions of adjustment with reference to the yoke C′. By this construction it will be seen that means are provided by which any desirable degree of adjustment in the angular position of the main yoke C may be secured and retained. This adjustment serves to bring the center of the carrying-wheels forward or back with reference to the tongue, the beams, and other supporting mechanism. The casting E′ is constructed with the hub or boss portion *d′* offset from the sleeve portion *d*, so that the end of the link E is adapted to pass the end of the yoke C′, so that a sufficient adjustment of the parts may be secured without unnecessarily increasing the size of the casting E′, the centers of the connecting-

link and the trunnions on the respective yokes being at the same time kept within the same plane or line.

The tongue B, it should be stated, is bifurcated at the rear end, forming two forks or wings B′ and B², each of which is connected to the yokes C and C′, preferably, by means of U-shaped connecting-pieces *e*, the bifurcated tongue being thus adapted to act in the nature of a frame to support the other parts of the device.

Between the respective yokes C and C′, I provide a connecting-bolt *f*, adapted to connect the respective forks B′ B² of the tongue, and about this connecting-bolt *f* I place a sleeve *f′*, whereby the respective forks B′ B² of the tongue may be drawn tightly against the ends of said sleeve and be held firmly in position. Connected to this bolt or sleeve is a U-shaped supporting-piece E, to which is secured the end of a seat-supporting beam F′. This seat-supporting beam F′ is preferably made of ordinary black pipe or gas-pipe, one end thereof being flattened, as shown at *g*, to permit it to be secured to the U-shaped piece F by riveting or otherwise. This hollow seat-support or beam F′ extends backwardly under the center portion of the yoke C and carries a seat F², which is preferably formed at the bottom to fit over said beam, to which it may be secured in different positions of adjustment by a bolt *g′*, passing through said support or beam. Connecting the beam F′ with the yoke C is a U-shaped hanger F³, adapted to embrace the beam F′ and provided with hook-shaped ends g^2 to hook over the supporting-yoke C. On the lower side of the hollow supporting-beam F′ at this point I secure a ratchet-piece g^3, having a series of notches or ratchets g^5, into which the U-shaped hanger F³ is adapted to engage. The hollow supporting-beam F′ is made of such length that the hanger F³ in any position of adjustment is forward of its center, so that the pressure on the U-shaped supporting-piece F is in an upward direction against the sleeve *f′*. This U-shaped supporting-piece I make of resilient material adapted to yield under unusual strain, and thus form a yielding cushion or spring for the beam F′ and its seat F². The U-shaped piece F is provided with slotted hook-shaped openings f^2, adapted to hook over and engage the sleeve *f′*, the slotted opening f^2 being provided with an opening f^3, which normally stands above the sleeve *f′*, forming a sort of a bayonet-lock to secure the yoke F in position on the sleeve *f′* and permit its removal therefrom when moved to an unusual position.

By the arrangement of the seat and seat-supporting mechanism it will be seen that a simple arrangement of parts is secured, adapted to secure a yielding seat, which is adjustable to any desired height, the adjustment being accomplished by changing the hanger F³ to different positions in the notched or ratchet-shaped piece g^3, the different weights of the driver being also adapted to be compensated for by the adjustment of the carrying-wheels and main supporting-yoke with reference to the tongue or other mechanism.

To provide for raising and lowering the respective beams D and their shovels, lifting-levers D′ are furnished. These levers D′ are preferably pivoted to a supporting ratchet-stand D² on the yoke C. A connection is formed from the lifting-lever D′ to the beam D by means of a chain or other suitable device D³. A spring D⁵ is connected to the chain to form a yielding connection between the lever D′ and the beam, and thus relieve the said lever from unusual strain, shocks, or jars occasioned by the movement of the beams D. In order to provide for this yielding movement and at the same time furnish a positive stop for the beam with reference to the raising-lever, I extend the chain D³ entirely through this spring D⁵ and connect the ends of said spring into the links of the said chain, so that the intervening links between the respective ends of the spring are left loose or slack, as shown in Fig. 2. As the spring is extended the links of the chain are brought taut, and thus furnish a positive stop for the said spring and limit the movement of the beams D.

In Fig. 10 I have shown the construction modified, a single link *h* of the proper length being used to form the connection through the spring and engage with the chain-links, which are attached to the end of the spring. This construction is the preferable one, inasmuch as the single extended link forms a guide and lateral support for the spring as well as a stop to limit the movement thereof.

The supporting ratchet-stand D² is provided with ratchet-teeth *k*, adapted to be engaged with a spring bolt or latch *k′* in the usual manner, by means of which the lever may be held in any desired position to secure the proper adjustment of the beams.

It is desirable in the operation of these cultivators to keep the shovels, when in operation, at a uniform depth, while it is frequently necessary to raise them up for cleaning or for other purposes. In order to secure this adjustment, I provide an adjustable gage *l* for the ratchet-stand D², whereby the lever D′, having been moved to raise the beams, may be returned to the exact position previously occupied without effort or mental calculation on the part of the operator. This gage *l* consists of a simple arm or lever having a slotted opening *l′* at one end, adapted to fit over the bolt or pivot l^2, about which the lever D′ revolves. At the outer end a stop projection l^3 is provided and one or more ratchet-teeth l^5 to engage with the teeth *k* of the ratchet-stand. This gage *l*, by reason of the slotted opening *l′*, is adapted to be moved to any desired position about the ratchet-stand *k* and remain in this position by gravity. In any

position it forms a positive stop to limit the movement of the lever D′ in lowering the beams or shovels.

Having thus described my invention, I claim—

1. In a cultivator, the combination, with the supporting-wheels and a main supporting-yoke, of a tongue pivotally secured to said yoke, an adjustable connecting-link connected to said tongue and adapted to hold said tongue normally in a fixed angular position with reference to said yoke, and means for adjusting said link to change said tongue to different angular positions with reference to said yoke to properly distribute the weight upon the driving-wheels, substantially as specified.

2. The combination, with the driving-wheels, the main supporting-yoke, and a tongue pivotally connected to said yoke, of a beam-supporting yoke or hanger connected rigidly to said tongue, and an adjustable connection between said main supporting-yoke and said beam support or hanger, substantially as specified.

3. The combination, with the main supporting-yoke pivotally connected to the tongue and a beam support or hanger C′, rigidly connected to said tongue, of the adjustable connecting-link E, substantially as and for the purpose specified.

4. The combination, with a main supporting-yoke, the carrying-wheels, and a tongue pivotally connected to said yoke, of a beam support or hanger rigidly connected to said tongue, a connecting-link extending from said main supporting-yoke to said hanger, and an offset connecting-piece attached to said beam support or hanger and adjustably connected to said link, substantially as specified.

5. The combination, in a cultivator, with the main supporting-yoke and a tongue, of a seat-supporting beam depending from said yoke and a yielding connection between the inner end of said beam and the tongue, substantially as specified.

6. The combination, in a cultivator, with a bifurcated tongue, as described, of a backwardly-extending seat-support, a U-shaped hanger adapted to form a fulcrum therefor, and a U-shaped connecting-piece of resilient material adapted to connect the forward end of said seat-support to the tongue, substantially as specified.

7. The combination, in a cultivator, with a tongue or frame, of a seat-support having a ratchet piece or segment, a hanger adapted to engage with said ratchet and suspend the same from said tongue or frame, and a resilient connection between the inner end of said supporting-piece and the tongue or frame, substantially as specified.

8. The combination, with a yoke C and tongue B, of the seat-support F′, adjustable hanger F^3, adapted to hook over said yoke and engage with ratchets on said seat-support, and a resilient U-shaped connecting-piece F, substantially as specified.

9. The combination, with the bifurcated tongue, of the sleeve and connecting-bolt extending between the forks thereof, a backwardly-extending seat-support suspended between said forks, and a U-shaped resilient connecting-piece adapted to hook over said sleeve, substantially as specified.

10. In a cultivator, a seat-supporting beam formed of pipe reduced at one end and connected to a resilient U-shaped connecting-piece, a U-shaped hanger having hook-shaped ends adapted to suspend said seat-support, and means for connecting said U-shaped piece to the frame or tongue, substantially as specified.

11. The combination, with an adjustable seat-support, as described, of a main supporting-yoke and a tongue pivoted thereto, an adjustable connecting-link between said yoke and tongue adapted to normally hold said tongue in a fixed angular position with reference to said yoke, and means for varying the length of the link to change the angular position of said tongue and yoke, and thus compensate for the varying weight upon said seat-support, substantially as specified.

12. The combination, with the beam and lifting-lever, of a flexible connection and a spring attached at each end to said flexible connection, and a rigid link connected at each end to said flexible connection and to said spring, said link being longer than the normal length of said spring, substantially as specified.

13. The combination, with a chain, of a spring connected at each end to the links of said chain and a single link of greater length than the normal length of said spring, said link passing through said spring and attached at each end to said chain, substantially as specified.

14. The combination, with a pivoted lever and its ratchet-stand, of an adjustable gage adapted to engage with the teeth in said stand, said gage being extended to the center of said ratchet-stand and provided with a slotted opening which engages over a projection at the pivoted center of said lever, substantially as specified.

In testimony whereof I have hereunto set my hand this 18th day of February, A. D. 1890.

FRANK R. PACKHAM.

Witnesses:
CHAS. I. WELCH,
CHASE STEWART.