No. 706,942.

Patented Aug. 12, 1902.

F. G. HOAG.

CULTIVATOR.

(Application filed Mar. 4, 1902.)

(No Model.)

2 Sheets—Sheet 1.

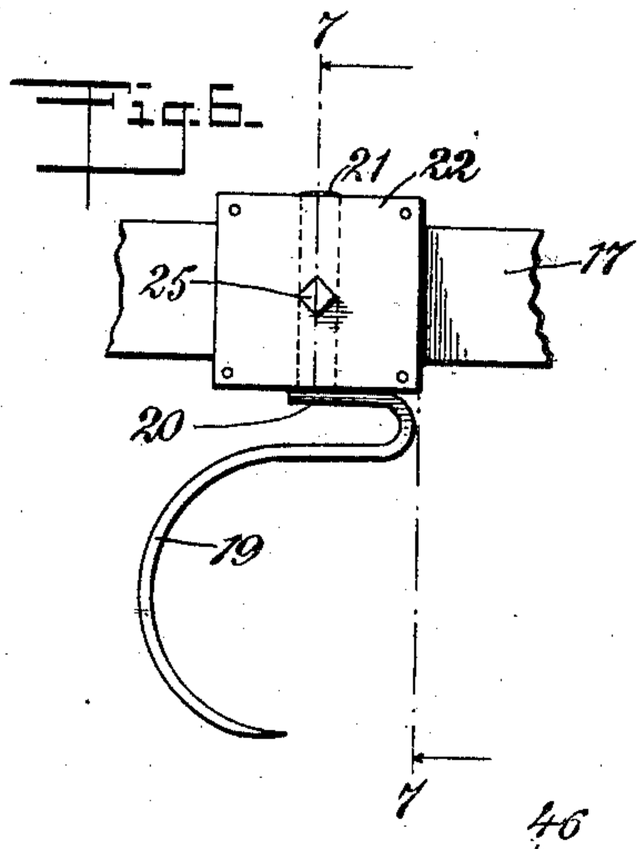

Fig. 6.

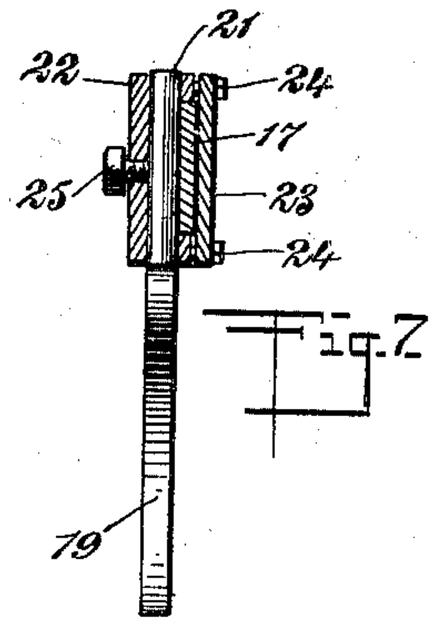

Fig. 7.

Fig. 1.

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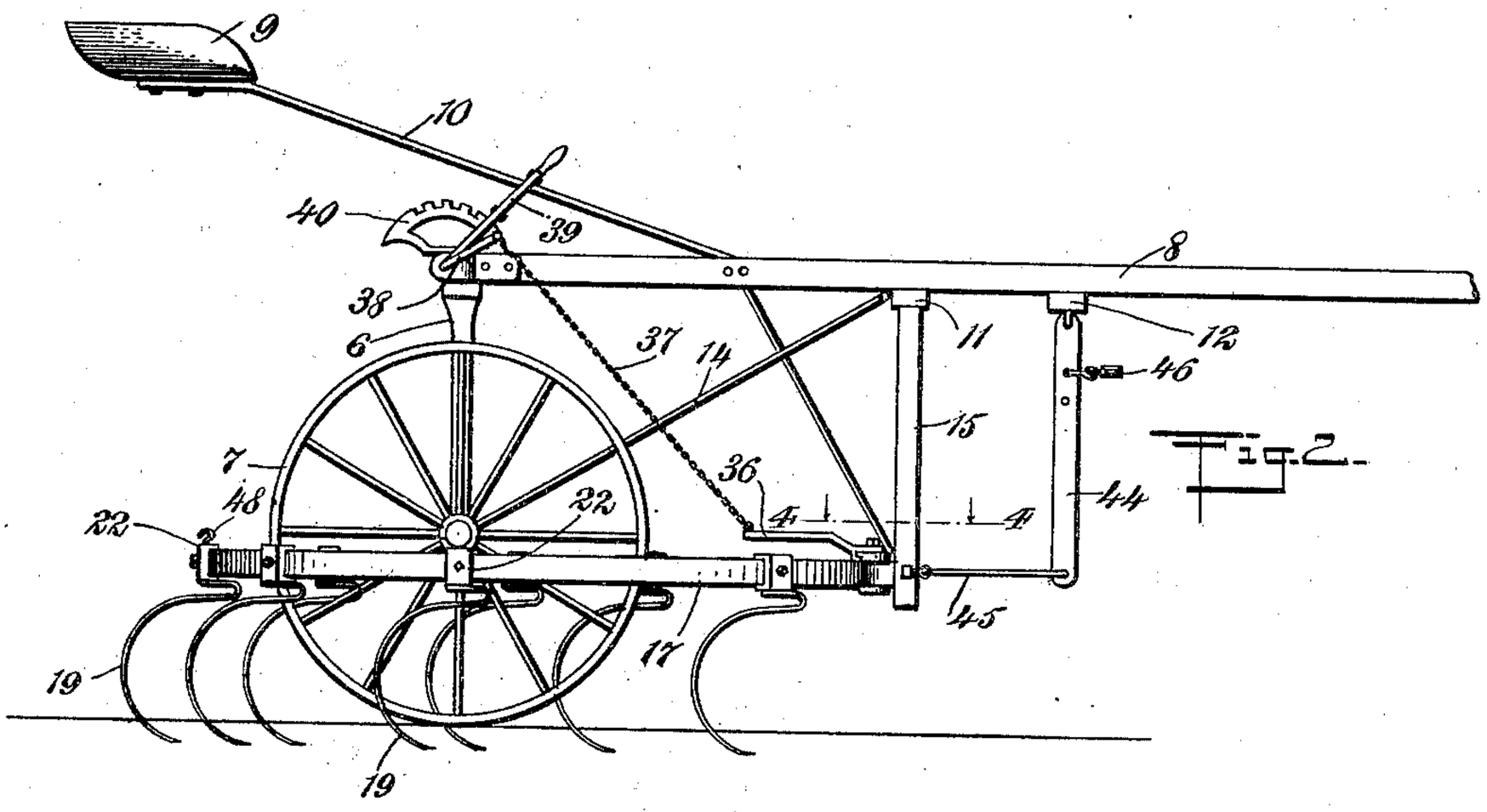

Fig. 2.

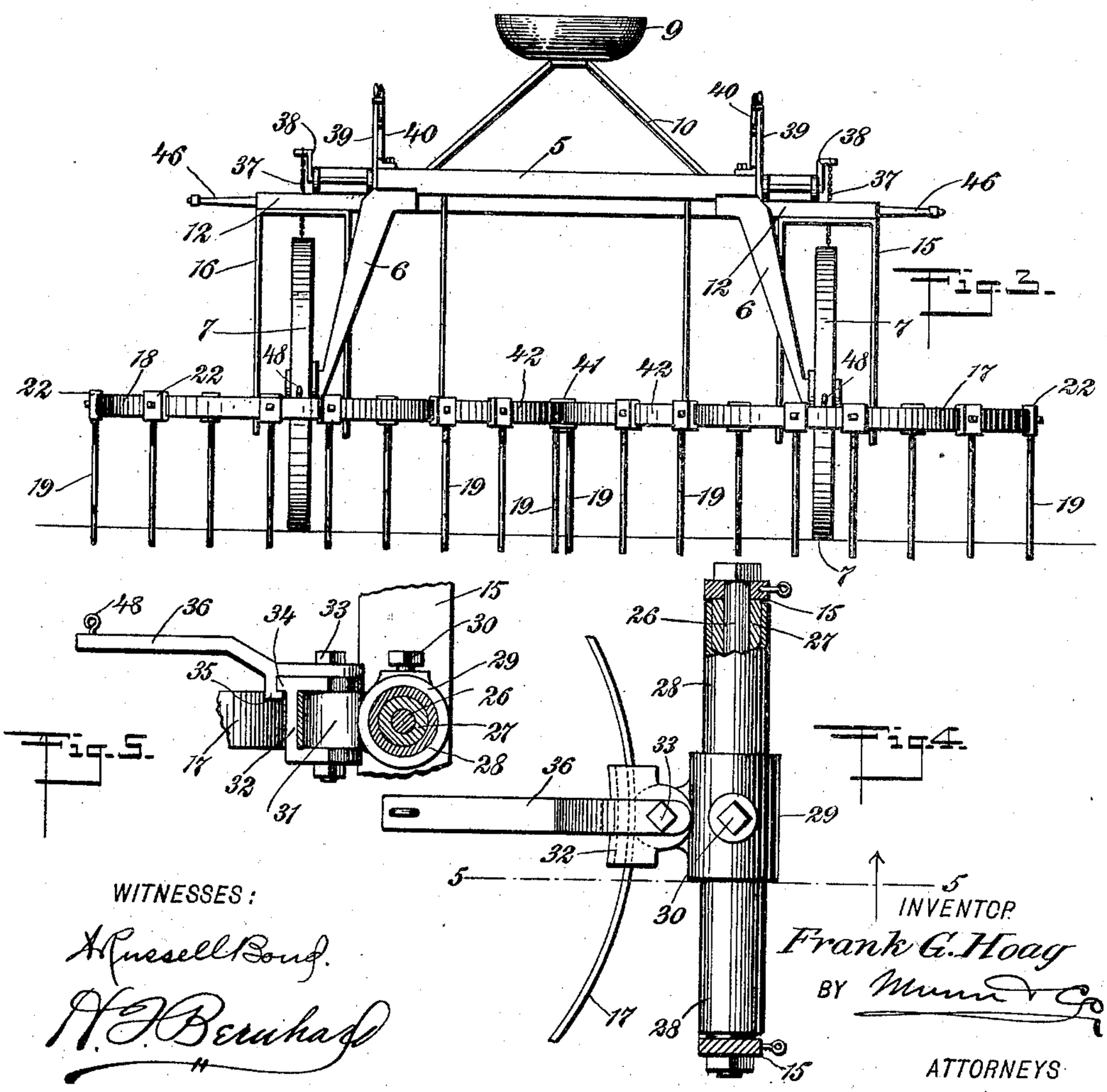

Fig. 3.

Fig. 5.

Fig. 4.

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FRANK G. HOAG, OF BATTLECREEK, MICHIGAN.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 706,942, dated August 12, 1902.

Application filed March 4, 1902. Serial No. 96,610. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. HOAG, a citizen of the United States, and a resident of Battlecreek, in the county of Calhoun and State of Michigan, have invented new and useful Improvements in Cultivators, of which the following is a full, clear, and exact description.

My invention relates to improvements in cultivators; and the object that I have in view is the provision of a simple, compact, and strong machine which embodies means for the removal and replacement of a central toothed section, which also allows for the lateral adjustment of the toothed side frames, so as to cultivate both sides of a row of growing corn, and which allows the front portions of the side frames to be raised and to swing free.

With these ends in view the invention consists in the combination, construction, and arrangement of parts, which will be hereinafter described, and the actual scope of the invention will be defined by the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a cultivator constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation. Fig. 4 is a sectional plan view, on an enlarged scale and taken in the plane of the dotted line 4 4 of Fig. 2, illustrating the means for adjustably connecting one of the tooth-carrying frames to the main frame. Fig. 5 is a detail vertical section in the plane of the dotted line 5 5 of Fig. 4. Fig. 6 is an enlarged view, in side elevation, illustrating the means for adjustably clamping one of the cultivator-teeth to a portion of a tooth-carrying frame; and Fig. 7 is a transverse section in the plane of the dotted line 7 7 of Fig. 6 looking in the direction of the arrow.

5 designates a cross-piece provided with the depending arms 6, said cross-piece and the arms forming a bent axle adapted to support the carrying-wheels 7, the latter being made, preferably, of metal. The members forming the draft-tongue 8 are united firmly at their rear ends to the cross-piece 5 of the axle, and these members are disposed in the forwardly-converging relation shown more clearly by Fig. 1. The seat 9 is secured firmly to the rear ends of the forwardly-diverging bars 10, which are secured at their front ends to the members of the tongue 8. A horizontal cross-bar 11 is secured firmly to the lower edges of the tongue members 8, this cross-bar being located a suitable distance in advance of the axle. Another cross-bar 12 is secured between the members 8 of the tongue, and the two cross-bars are stayed by the bar 13. The depending arms 6 of the bent axles are braced by the inclined rods 14, the same extending from the cross-bar 11 to the lower end portions of the arms. (See Fig. 2.)

The end portions of the cross-bar 11 are extended beyond the outside faces of the converging members 8, forming the tongue, and to said end portions of the cross-bar are firmly secured the inverted-U-shaped hangers 15 16, the same being more clearly shown by Fig. 3 of the drawings. These hangers extend or depend a suitable distance below the cross-bar 11, as shown by Figs. 2 and 3, and said hangers support suitable adjustable devices to be hereinafter described, whereby the two carrying-frames 17 18 may be individually connected with said hangers in an adjustable manner.

The two carrying-frames 17 and 18 are preferably of the approximately oval shape shown by Fig. 1, although this particular shape of the frames is not essential, and said frames are arranged side by side, so as to lie in substantially the same horizontal plane, the two frames being disposed on opposite sides of the median line of the machine, as represented more clearly by Fig. 1. I prefer to make each tooth-carrying frame from a band or bar of metal, which is bent to the substantially oval form heretofore described, and to arrange the pointed or narrow end of said frame at or toward the front, thus bringing the contracted end of each frame adjacent to one of the hangers 15 or 16.

The frames 17 18 are equipped with gangs of cultivator-teeth 19, and the gang of teeth on each frame is disposed in the staggered order shown by Fig. 1—that is to say, two of the teeth are arranged at the narrow front portion, two more teeth at the widest portion of the frame, and a number of teeth—as, for

example, four teeth—are connected to the rear portion of said frame. The particular number and arrangement of teeth in the gang on each frame may, however, be varied. Each tooth is preferably of the form shown more clearly by Fig. 6, and it is formed from a piece of flat spring metal, which is bent to the curved shape shown in said figure, the upper portion of said spring being curved backward upon itself to form an arm 20, which is equipped with an upstanding shank 21, the latter being indicated by dotted lines in Fig. 6 and by full lines in Fig. 7.

Each tooth is connected individually and adjustably to its proper frame by means of a clamp 22, the same being in the form of a flanged plate arranged to laterally receive the bar forming the frame adapted to carry the gang of teeth. (See Figs. 6 and 7.) This plate of the clamp is open on one side in order to enable the clamp to be applied to the frame, and the parts are held firmly together by the provision of a removable plate 23, the latter being secured to the plate 22 of the clamp by means of bolts 24. (See Fig. 7.) Said plate 22 of the tooth-clamp is provided with a vertical socket adapted to receive the shank 21 of the spring-tooth, and this shank is held adjustably in the socketed clamp by a set-screw 25.

It will be observed that the clamp 22 and the tooth held therein may be shifted back and forth to variable positions on the carrying-frame, and said clamp may be held securely in its adjusted position by tightening the bolts 24, so as to firmly connect the parts 22 23 upon the carrying-frame. At the same time the shank of the tooth may be raised or lowered in the socket, or it may be turned axially in the socket, so as to properly position the tooth in the clamp, and the screw 25 serves to bind against the tooth-shank in order to hold said tooth in its proper position. It will be understood that the adjustment of the clamp on the frame and the adjustment of the tooth within the clamp may be effected separately and individually.

I will now proceed to describe the means for adjustably connecting one of the tooth-carrying frames to one of the hangers; but it will be understood that each frame is connected in a similar way to one hanger. Through the lower portion of the inverted-U-shaped hanger—as, for example, the hanger 15—passes a bolt or headed rod 26, (see Figs. 4 and 5,) and on this rod is loosely arranged the sleeves 27 28, the same being disposed between the terminal portions of the hanger 15 and serving to brace the separated ends thereof. Although I have shown two sleeves on the through bolt or rod 26, it is evident that one of these sleeves may be omitted. A shiftable sleeve or collar 29 is arranged loosely on the outside sleeve 28, and it is adapted to be adjusted back and forth on said sleeve 28 as may be desired. This shiftable collar is equipped with a binding-screw 30, adapted to impinge the sleeve 28 and to hold said collar 29 from endwise or rotary displacement on the sleeve 28. The shiftable collar is provided with a rearwardly-extending arm 31, which is embraced by a substantially U-shaped clip 32, the legs of which are arranged to overlap the top and bottom edges of the arm 31, as shown by Fig. 5. This clip and the arm of the shiftable collar are connected pivotally together by means of a vertical bolt 33, the same being arranged to pass through the arms of the clip and the arm of the collar, thus permitting the clip to turn in a horizontal plane and on a vertical axis afforded by the bolt 33. The front contracted portion of the tooth-carrying frame is held or confined between the cross-bar of the clip 32 and the rear edge of the arm 31, and said frame is thus connected by the clip and the bolt to the collar 29, which is attached to the sleeve 28, that is supported in the lower end of the hanger. The clip 32 is provided at its top edge with a rearwardly-extending flange 34, and this flange is engaged by a finger 35 on an adjusting-arm 36. This arm is arranged to overlap the top edge of the U-shaped clip 32, and it is fitted loosely on the upper portion of the bolt 33, whereby said arm 36 is pivotally connected to the clip by the bolt, and the finger of the arm engages with the flange of the clip, so as to lift the clip and the frame which is attached thereto. This lifting action of the arm 36 is effected and controlled by a chain 37, which is attached to the rear end of the arm, as shown by Fig. 2, said chain being connected at its upper end to a crank-arm 38, which forms part of an adjusting-lever 39, the latter having a suitable locking-pawl (not shown) adapted to engage with a notched segment 40, which is attached to the cross-piece 5 of the bent axle. It will be understood that one of these levers 39 is provided for each arm 36, connected to each tooth-carrying frame, and this lever may be operated so as to lift the arm of the frame, whereby the front end of the frame may be raised, so as to swing free.

In Figs. 1 and 3 of the drawings I have shown my cultivator equipped with a central section, which comprises a frame-piece 41, having the rearwardly-diverging arms 42, said frame-piece and its arms being equipped with a series of the spring-teeth 19. This central section is disposed between the oval-shaped frames 17 18, and the rear ends of the arms 42 may be attached to or connected with said tooth-carrying frames in any suitable way. The front portion of the frame member 41 is adapted to be connected with the hangers 15 16 by the inclined bars or braces 43, (see Fig. 1,) the same extending from the frame-section 41 and attached in a suitable way to the hangers. This central frame-section and its teeth may be disconnected from the implement, and the two frames 17 18 and the teeth thereon may be separated or adjusted laterally for any desired distance,

whereby the implement is adapted for operation on the two sides of a row of growing corn. In this lateral adjustment of the frames 17 18 the collars 29 are moved endwise on the sleeves 28, which are supported in the lower ends of the hangers.

The draft appliances may be of any suitable character; but, as shown, I have provided the cross-bar 12 with the depending draft-bars 44, the latter having connection at their lower ends by means of links 45 with the hangers 15 16. The singletrees 46 are connected adjustably in any suitable way to the draft-bars 44. (See Figs. 1 and 2.)

The two sleeves 27 28 at the lower part of the hanger 15 are advantageous, because the outer sleeve 28 is adapted to turn or rock on the inner sleeve 27, the latter being held stationary within the hanger. The sleeve 28 may be said to be made fast with the toothed frame, in a certain sense, in that the collar 29 and the coupling 32 serve to unite the frame and the sleeve in a manner for the latter to rock on the sleeve 27 when said frame is raised or lowered.

Each tooth-carrying frame is provided at its rear portion with a hook 48, to which may be connected the chain 37, thus making provision for lifting the rear portion of the frame.

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

1. A cultivator, comprising a draft-frame having depending hangers, side frames connected to said hangers, a removable frame-section having rearwardly-diverging arms attached to said side frames and having a forwardly-extending arm between the side frames, draft connections attached to said arm of the removable frame-section and to the hangers, and teeth secured to the side frames and the frame-section.

2. A cultivator, comprising a draft-frame having depending hangers, horizontal bolts secured in the lower parts of the hangers, rockable sleeves fitted individually on the bolts, shiftable collars fitted on said sleeves for adjustment lengthwise thereof and each having means for clamping the same fast with the sleeve to turn therewith, toothed frames having pivotal connection with the collars, and means for lifting said frames.

3. In a cultivator, the combination of a hanger formed by a pair of members, a horizontal bolt secured in said members of the hanger, a sleeve fitted loosely on the bolt and disposed between the members of the hanger, a collar shiftable lengthwise on the sleeve and having a clamp for making the collar fast with the sleeve, a toothed frame, and a transverse pivotal connection between the collar and the frame.

4. In a cultivator, the combination with a hanger-supported sleeve, of a clip having a pivotal connection with said sleeve, a bowed toothed frame confined in said clip, and a lifting-arm having a pivotal and shiftable engagement with the clip.

5. In a cultivator, the combination with a sleeve, and a collar, of a clip united by a transverse pivot to the collar and having a lip or flange, a frame attached to the clip, and a lifting-arm connected to said transverse pivot and shiftably engaging with the flange of the clip.

6. A wheeled cultivator having a hanger-supported clip, a tooth-carrying frame attached to the clip, and a lifting-arm having a pivotal and shiftable connection with the clip.

7. A wheeled cultivator provided with a hanger, a collar supported therein and provided with an arm, a flanged clip pivoted to said arm of the collar, a tooth-carrying frame confined in the clip, a lifting-arm fitted to the pivotal bolt of the clip and having a finger which engages with said clip, and means for raising said lifting-arm.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK G. HOAG.

Witnesses:
FOSTER M. METCALF,
ALBERT C. PERKINS.