

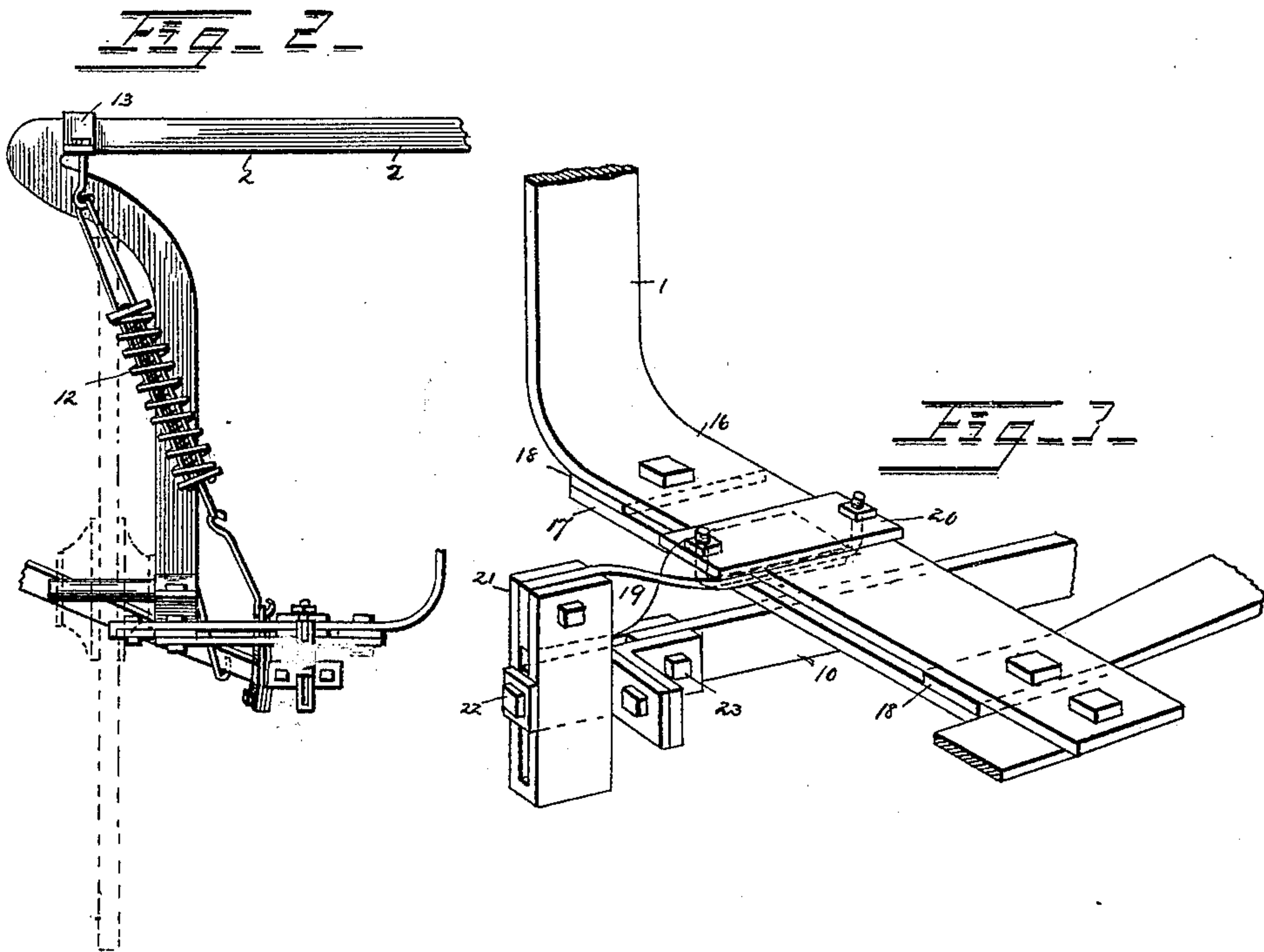
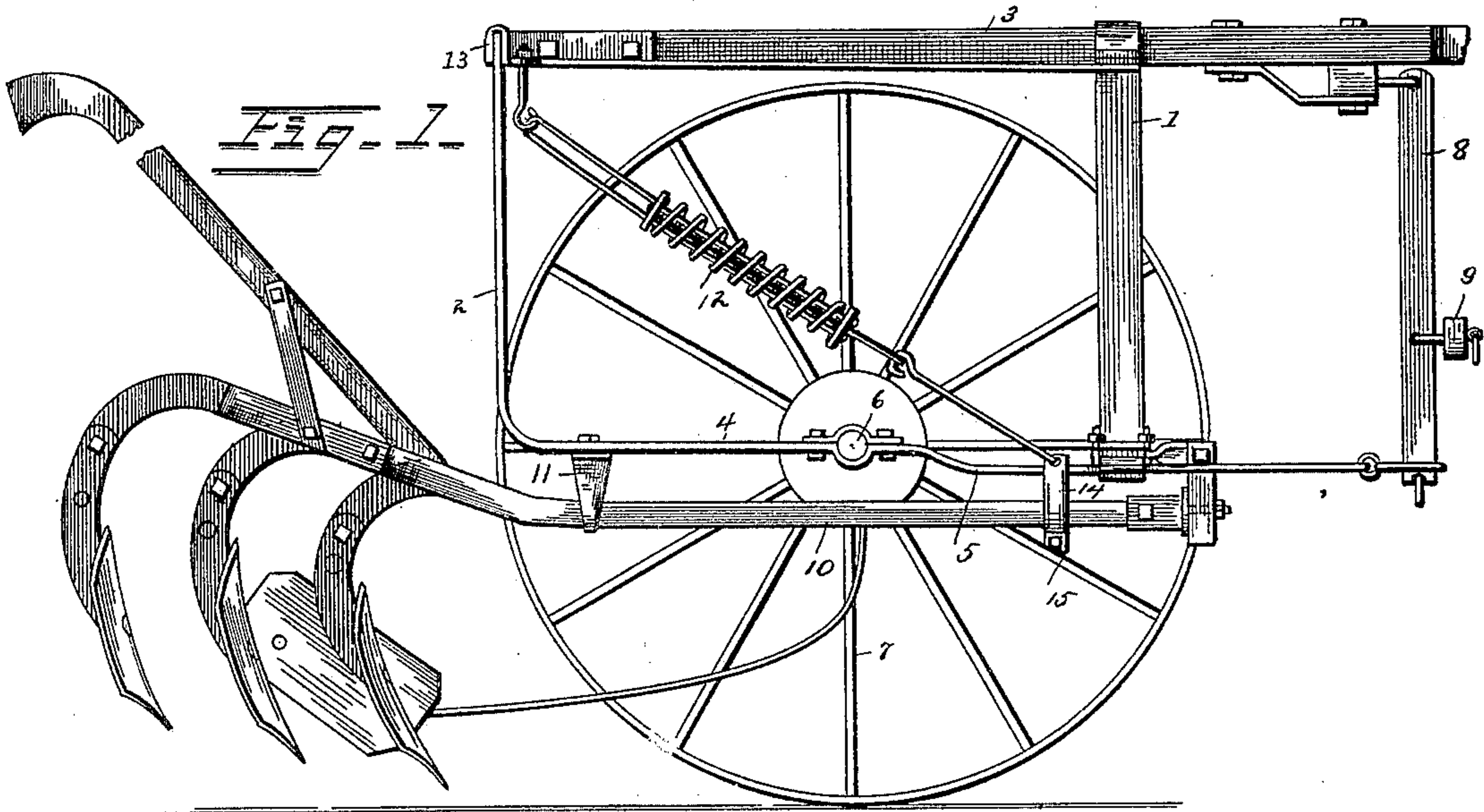
(No Model.)

W. WARING & J. C. BIRD.

WHEEL CULTIVATOR.

No. 398,677.

Patented Feb. 26, 1889.



WITNESSES,

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# UNITED STATES PATENT OFFICE.

WILLIAM WARING, OF COLORA, AND JOSEPH C. BIRD, OF RISING SUN,  
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## WHEEL-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 398,677, dated February 26, 1889.

Application filed October 15, 1888. Serial No. 288,049. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM WARING, of Colora, in the county of Cecil and State of Maryland, and JOSEPH C. BIRD, of Rising Sun, in the same county and State, both citizens of the United States, have invented certain new and useful Improvements in Wheel-Cultivators; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to cultivators, and has for its object the construction of a machine in which the frame of the machine and the tongue will be balanced on the axle, whether the plows are operating on the soil or the machine in transit to or from the place of work.

A further object of the invention is to simplify and strengthen the clevis on which the cultivator-beam is pivoted.

A further object is to control the side draft of the cultivator-beams.

The invention consists in rendering the point of attachment of the controlling device for side draft to the frame laterally adjustable from the plane of the drag-bars, so as to control outward or inward draft of said drag-bars when plowing.

It embodies, also, certain details of structure, which will hereinafter be fully described in this specification, and then definitely indicated in the appended claims.

In the accompanying drawings, which illustrate our invention, Figure 1 is a side elevation of a machine embodying our improvements. Fig. 2 is a detached view looking from the front of part of the machine, illustrating the means of controlling the side draft of the drag-bars. Fig. 3 is a perspective view of a detached part, showing the improvements in the clevis.

The frame of our machine consists of two transverse arches, 1 2, upon which the beam 3 is mounted. At the front end of this beam the tongue is secured. From the rear arch,

2, extends forwardly a metallic arm, 4, on each side of the machine, this arm, as shown in the drawings, being a continuation of the arch 2.

The draft apparatus consists of a link, 8, suitably hung at the front end of the machine, as shown in Fig. 1, and a singletree, 9, attached to each link. On a clevis attached to a horizontal extension of the front arch, 1, in a manner which will presently be described, is pivotally supported the cultivator-beam 10, the hook 11 being bolted to the machine at a point rearwardly of the clevis. There is a hook, 11, for each cultivator-beam, and the hook is so placed that when the cultivator-beams are supported in the hooks the whole machine, including the tongue and draft apparatus, will be balanced on the wheels 7. The particular location of the hooks 11 in any case will depend on the manner in which the weight of the machine is distributed with reference to the spindle 6 and the weight of the cultivator-beams, and may be located at a point rearward or forward of the spindle 6, the rearward extension of the machine, as shown in the drawings, permitting the hooks to be located at a proper rearward point to establish a balance. By giving the machine this capability the necks of the horses are relieved of the weight of the tongue, and their work is rendered much lighter. In some cases the hook might be secured to the spindle, the only essential being that it should be rearward of the pivotal point of the drag-bars and fixed at the balancing-point.

In order to preserve the balance of the machine when the cultivator-beams are not hung in the hooks 11, we provide a spring, 12, connected at one end with the drag-bar at a suitable point and connected at the other end with a point of the frame rearward of the spindle 6. When the cultivators are resting on the ground, they produce, by means of the springs, a downward pull on the rear end of the frame and counterbalance the weight of the tongue. The springs 12 are made of such a strength as to just produce this counterbalancing effect. The point of attachment of each spring to the frame of the machine is made laterally adjustable outwardly and in-



wardly from the center of the machine. To accomplish this in the machine shown in the drawings the arch 2 is made to extend outside of the vertical plane of the wheel, as shown in Fig. 2, and the spring is supported on a hook, 13, which hangs over the arch and grips the same frictionally tight enough to prevent displacement when once adjusted. When plowing on hillsides, the cultivator-beams have a tendency to side draft, and by moving the hook 13 on the arch 2 toward the hill this draft may be checked. When in plowing a field the teeth used are of a shape that create a side draft on the drag-bars, the lateral movement of the hooks to or from the center of the arch will counteract the draft. If the tendency of the drag-bars is to spread, the hooks will be moved to a point near the center of the arch. If the tendency of the drag-bars is to approach each other, the hooks will be moved to a point on the edge of the arch, as shown in Fig. 2. The point of attachment of the spring 12 to the cultivator-beams is made longitudinally adjustable along said beam, so as to compensate for any variation in the resiliency of the spring. To accomplish this a stirrup, 14, is made friction-tight on the beam 10 by means of a bolt, 15. A link connects the stirrup with the spring, as shown.

On the horizontal extension 16 of the arch 1 (see Fig. 3) is bolted a plate, 17, spacing-strips 18 being placed between the two. A slot is thus formed in which the tongue 19 of the clevis is placed. This tongue extends only part way through the slot, and is clamped at any desired lateral position by means of the plate 20 and U-shaped bar. The limbs of this U-shaped bar pass through holes in the plate 20 outside of the extension 16, and one of the limbs passes through a hole in the tongue 19 of the clevis. By loosening the bolts on the U-shaped bar the clevis may be shifted laterally to the desired point and then clamped by tightening the nuts. The tongue of the clevis is twisted, as shown in Fig. 3, so as to bring its outer face perpendicular, and the end on which this face lies supports a slotted hanger, 21, in which the support for the front end of the drag-bar is secured by means of a screw or bolt, 22. It will thus be seen that the drag-bar is hung in a universal joint and is capable of any desired vertical or horizontal movement, the tongue 19 turning with a lateral adjustment and the pivot 23 permitting vertical movement. This feature of our invention is an improvement on the clevis

shown and described in the patent of Joseph C. Bird, No. 365,900, reissued September 18, 1888. In that patent the tongue of the clevis was held against lateral displacement by a laterally-adjustable hook secured to the frame. In practice the end of this hook is apt to break when the teeth of the cultivator-beam meet extraordinary resistance.

While we have shown and described a machine embodying the several structural features hereinbefore set forth, we desire to have it understood that some of said features may be used independently of the others, and some may be applied to machines of other construction than the one we have described.

The improvements we have herein described are not limited to walking-cultivators, but are also applied to riding-cultivators.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a cultivator, the combination, with the frame and drag-bars pivotally connected thereto, of a spring-connection between the drag-bars and the frame, the point of attachment to the frame being laterally adjustable from a vertical plane of the drag-bar, whereby side draft of the cultivator-beams inwardly or outwardly may be counteracted.

2. In a cultivator, the combination, with the frame thereof and drag-bars pivotally supported to said frame, of a spring-connection between each drag-bar and the frame of the machine, the point of connection on the drag-bar being longitudinally adjustable to vary the tension of the spring and counterbalancing effect and the point of connection on the frame being laterally adjustable to limit the side draft of the drag-bars, as and for the purpose set forth.

3. In a cultivator, the combination of the frame, a horizontal slotted arm for supporting the clevis, a clevis provided with a tongue extending into the slot in the arm, a clamping-plate, 20, and a U-shaped bar provided with nuts for locking the plate to the horizontal arm at any point in the slot, one limb of the bar 21 passing through the tongue of the clevis, as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM WARING.  
JOSEPH C. BIRD.

Witnesses:

PHILIP BROWN,  
W. W. WILEY.