No. 701,972. Patented June 10, 1902.

T. S. WARNER.

CULTIVATOR.

(Application filed Sept. 23, 1901.)

(No Model.) 4 Sheets—Sheet 1.

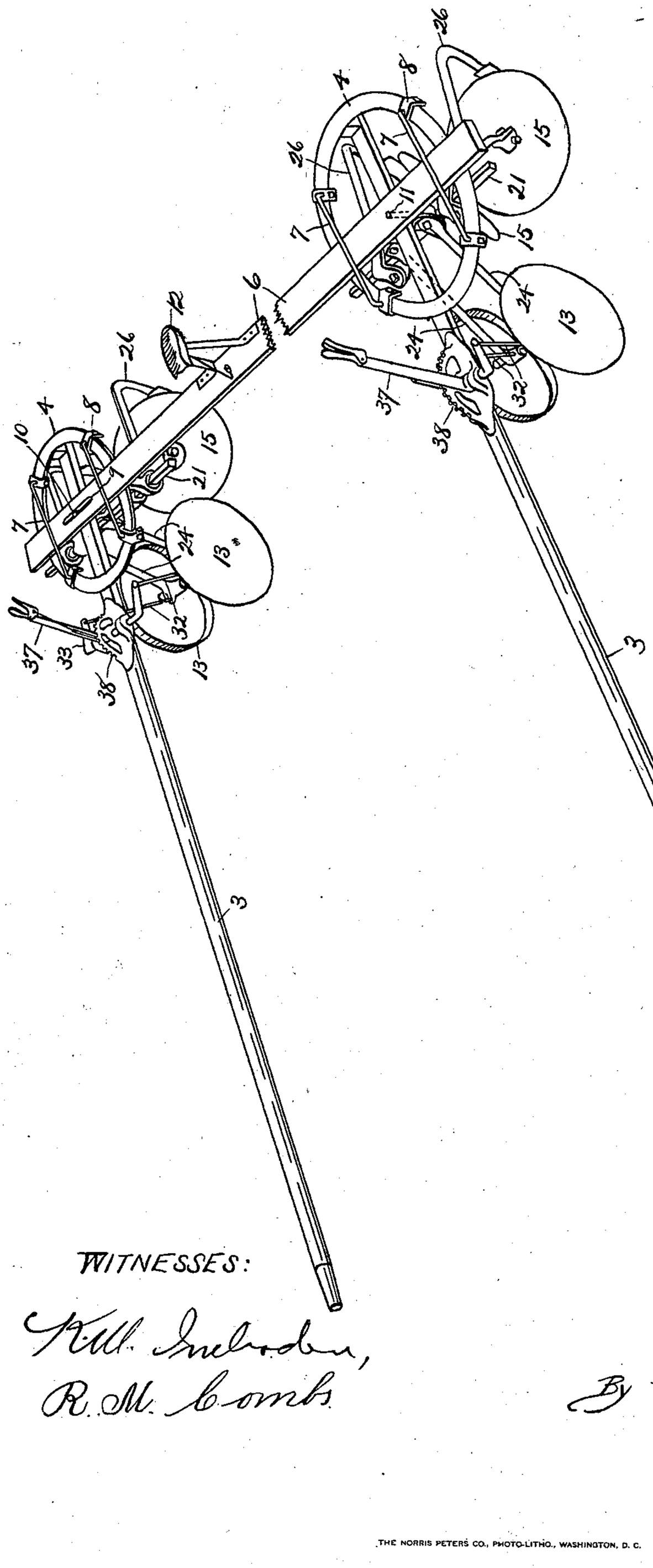

Fig. 1.

WITNESSES:

K. M. Snelsden,

R. M. Combs

INVENTOR,

T. S. Warner.

By Higdon & Higdon,

Atty's.

No. 701,972. Patented June 10, 1902.

T. S. WARNER.

CULTIVATOR.

(Application filed Sept. 23, 1901.)

(No Model.) 4 Sheets—Sheet 2.

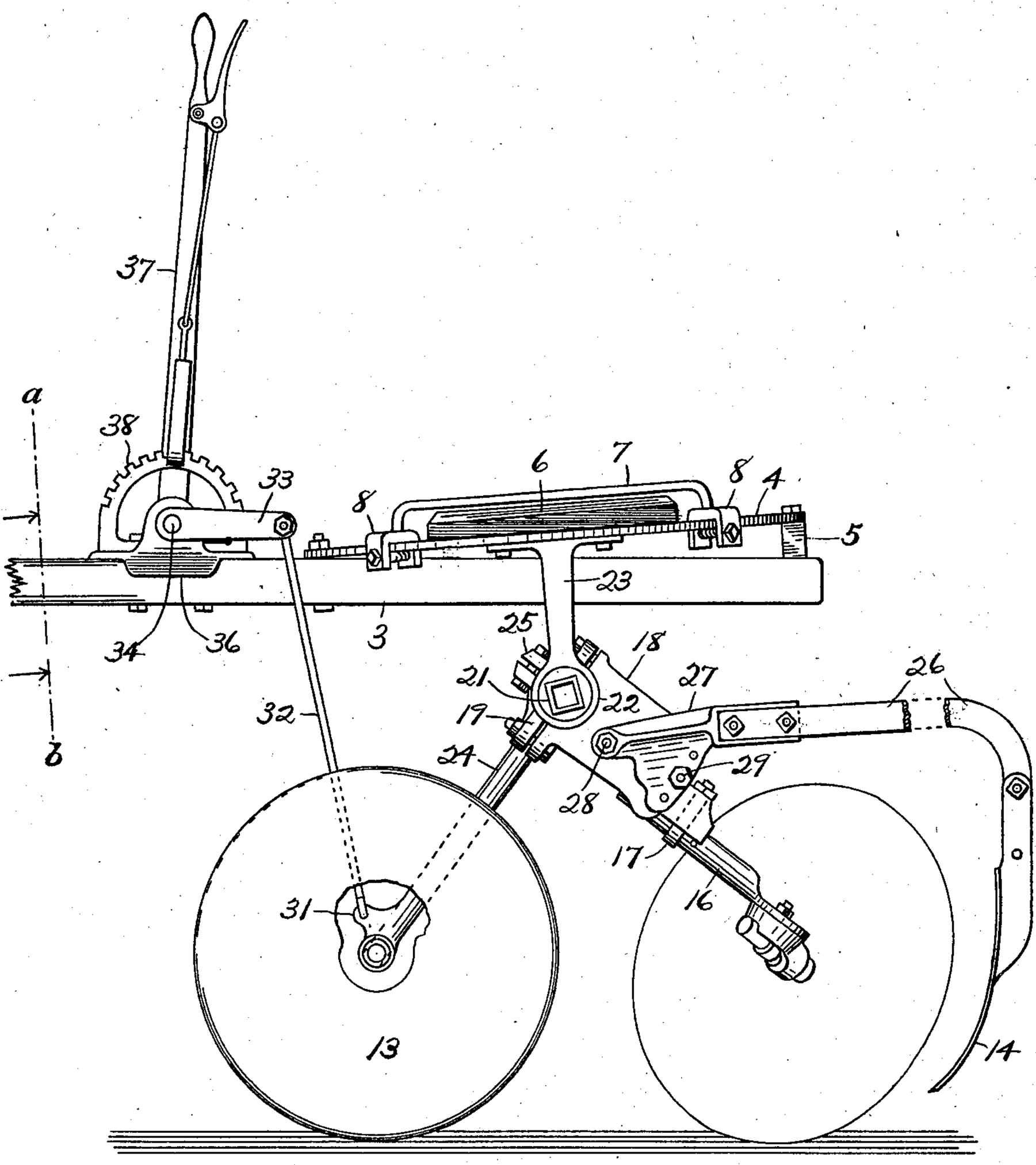

Fig. 2.

WITNESSES:

H. M. Imboden,

R. M. Combs.

INVENTOR,

T. S. Warner.

By Higdon & Higdon,

Att'ys.

No. 701,972. Patented June 10, 1902.

T. S. WARNER.

CULTIVATOR.

(Application filed Sept. 23, 1901.)

(No Model.) 4 Sheets—Sheet 3.

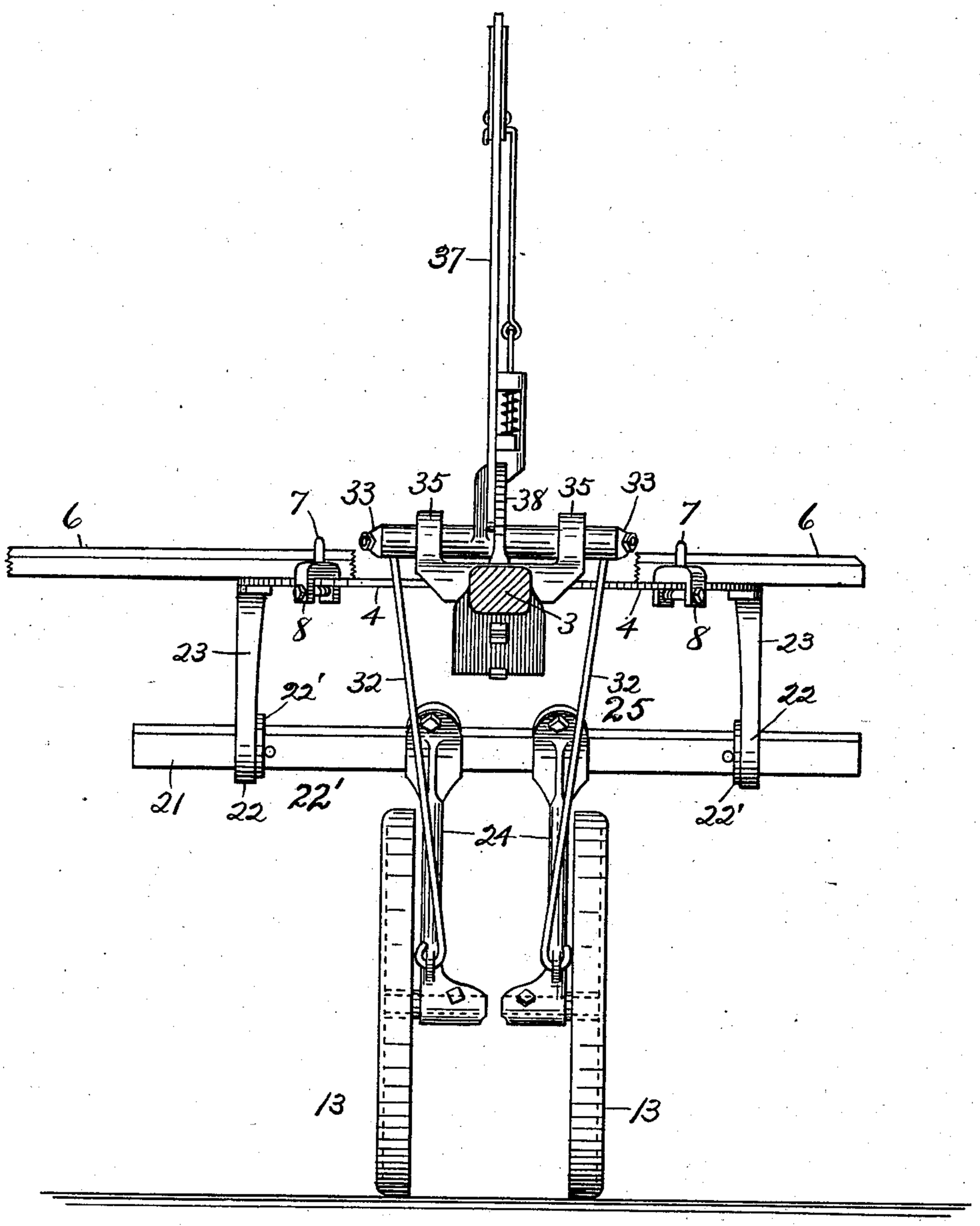

Fig. 3.

WITNESSES:

R. M. Imbodeu

R. M. Combs.

INVENTOR,

T. S. Warner.

By Higdon & Higdon,

Attys.

No. 701,972. Patented June 10, 1902.

T. S. WARNER.

CULTIVATOR.

(Application filed Sept. 23, 1901.)

(No Model.) 4 Sheets—Sheet 4.

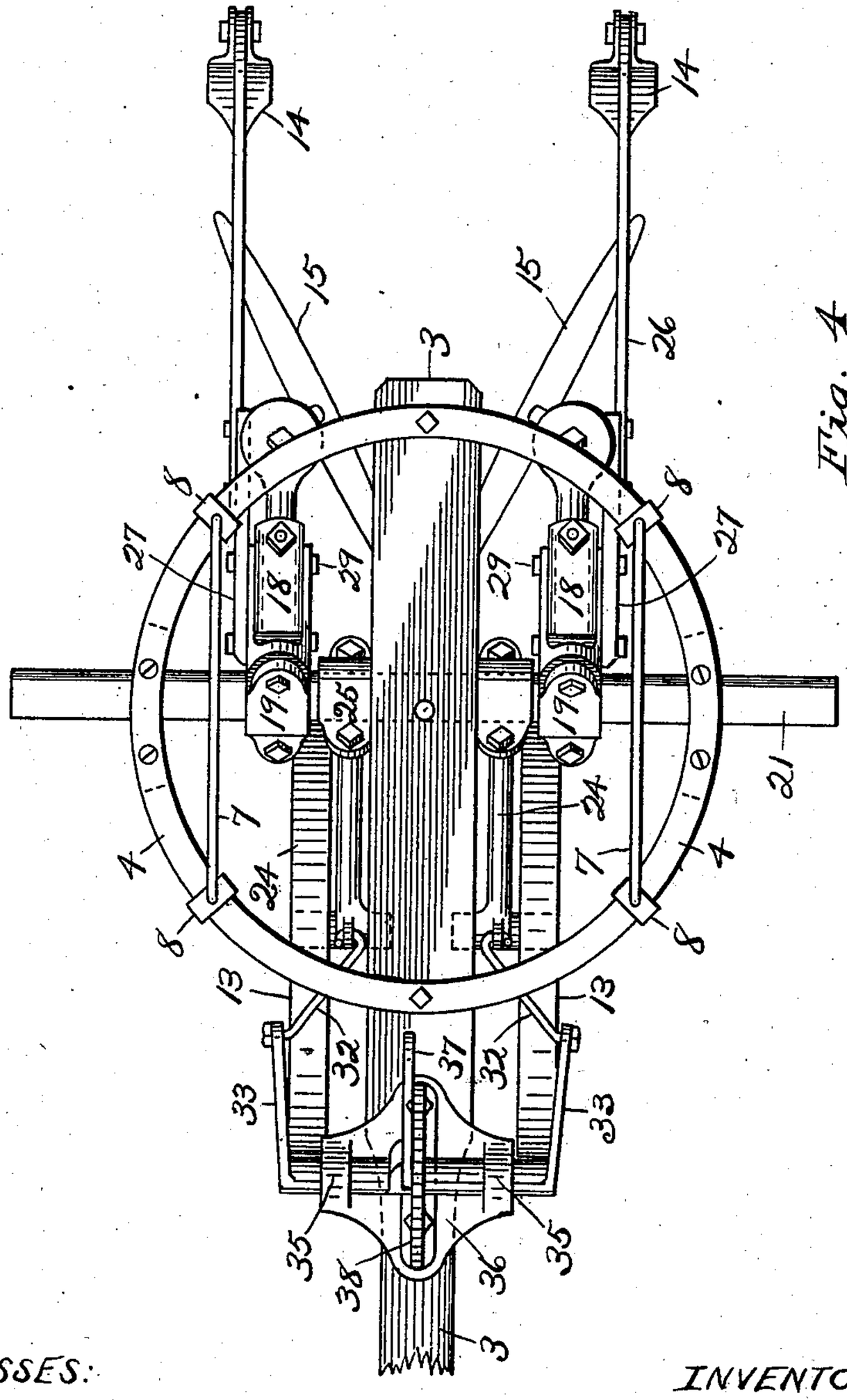

Fig. 4.

WITNESSES:

H. M. Imboden,

R. M. Combs.

INVENTOR,

T. S. Warner.

By Higdon & Higdon,

Att'ys.

UNITED STATES PATENT OFFICE.

THOMAS S. WARNER, OF FRANKFORT, KANSAS, ASSIGNOR TO CARL L. SWANSON, OF FRANKFORT, KANSAS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 701,972, dated June 10, 1902.

Application filed September 23, 1901. Serial No. 76,272. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. WARNER, a citizen of the United States, and a resident of Frankfort, in the county of Marshall and State of Kansas, have invented new and useful Improvements in Cultivators, of which the following is a specification.

My invention relates to that class of cultivators wherein the cultivating appliances may be lifted from the ground without causing the front end of the tongue to pull upward; and my object is to produce a machine of this character wherein the ground may be efficiently cultivated with each passage of the machine, so as to obviate the necessity of using a second cultivator to follow and loosen up the ground behind the leading one and outward of the furrows made by the disks of the latter, as is customary.

With this primary object in view and others of a secondary nature the invention consists in certain novel and peculiar features of construction and organization, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a perspective view of a double cultivator embodying my invention, part of the seat-plank being broken out. Fig. 2 is a side elevation of the gang at the left-hand end of the seat-plank, the tongue and the shovel-shanks being broken away. Fig. 3 is a sectional view taken on line *a b* of Fig. 2 looking in the plane of the ring and omitting the disks, shovels, and their supports, the seat-plank being broken away. Fig. 4 is a plan of one of the gangs, omitting the seat-plank.

I prefer to employ two gangs of disks and shovels, as shown in Fig. 1, these constituting a double-row cultivator. Each gang is provided with a tongue 3, secured to a ring 4. As the tongues are normally higher at their front ends when in use than at their opposite ends, blocks 5 are secured between the rear portions of rings 4 and the tongues for holding the rings approximately horizontal. The two gangs are connected by a seat-plank 6, supported near its ends by the rings 4 and retained thereon by rods 7, connected to clips 8, mounted slidably upon said rings. The gangs are thus prevented from tipping laterally. A longitudinal slot 9 is cut near one end of the plank 6 to receive a pin or stud 10, secured rigidly to the tongue 3. A similar pin or stud 11, secured to the other tongue 3, extends through a hole in the plank near its opposite end. The slot 9 permits the right-hand gang to adjust itself to rows of varying widths, as the pin 10 is movable in said slot.

12 designates the driver's seat, secured to the plank 6.

In Figs. 2, 3, and 4 only one gang of cultivating devices is shown, as the constructions of the two gangs shown in Fig. 1 are identical. Each gang is mounted on two wheels 13, as shown in said Figs. 2, 3, and 4, and comprises two shovels 14 and two disks 15. The lower disk-arms 16 are secured by eyebolts 17 to castings 18, which are secured with clips 19 upon a transverse rocker-bar 21, mounted in collars 22′ in bearings 22, connected by depending arms 23 to the lower face of the ring 4 at opposite points. The wheel-arms 24 are also secured with clips 25 to the rocker-bar 21 between the castings 18 at an angle of about ninety degrees with the disk-arms 16. Each shovel-beam 26 is bolted to a casting 27, and said castings 27 are pivotally secured to castings 18, respectively, at 28 and further secured thereto by bolts 29, said bolts 29 being adapted to engage any one of a series of holes in castings 27 for the purpose of effecting vertical adjustment of the shovels with relation to the disks, as will be understood by reference to Fig. 2. Formed at or near the lower ends of the wheel-arms 24, respectively, are two forwardly-extending perforated lugs or eyes 31, to which are connected the lower ends of two rods 32, the upper ends of which are connected, respectively, to cranks 33, rigidly secured on a shaft 34, mounted in bearings 35 on a casting 36, bolted to the tongue. A hand-lever 37 is secured on shaft 34 and is provided with a latch for engaging a notched segment 38. By moving lever 37 forward—*i. e.*, to the left in Fig. 2—the rods 32 are caused to push the wheel-arms 24 backward, thereby raising the disks and shovels higher. Reverse or back movement of lever 37 permits the wheels 13 to run forward, and the disks and shovels are correspondingly lowered. It will be readily understood that the

backward shifting of the wheels 13 when the shovels are being raised throws the center of gravity of the whole machine forward, thereby largely counteracting the upward tendency of the front portion of the tongue caused by the weight of the shovels, disks, and their supports. As shown in Figs. 3 and 4, the cranks 33 are farther apart than the wheel-arms 24, and the rods 32 therefore converge downwardly to connect with said arms. The castings 18 and the wheel-arms 24 are adjustable laterally along and upon the rocker-bar 21 and are shown in the drawings as disposed upon said bar in a most advantageous position for cultivating the field on the first passage of the machine thereover—that is, with the wheels 13 and the cultivating appliances as near to the center of the machine as possible. Before cultivating the ground the second time the castings 18 and the wheel-arms 24 are moved farther apart on rocker-bar 21, and the rods 32 will then be more nearly vertical or may be farther apart at their lower ends than the cranks 33.

I have found that by associating the disks and shovels together in the manner indicated—namely, with the shovels to the rear and outward of the disks—it is unnecessary to employ a second cultivator to follow up the leading one, because the shovels loosen up the earth between the rows, and thus perform the function which said second cultivator has performed heretofore. As a result an economy of time and labor is effected.

From the above description it will be apparent that I have produced a machine embodying the features of advantage enumerated as desirable in the statement of invention and which by the use of the rings 4 and sliding guides mounted thereon and holding the seat-plank in position makes it possible for the machine to turn with greater freedom than in machines of this type in which the plank has only a very limited pivotal movement.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cultivator, a suitable carrying-frame, a tongue therefor, a ring rigid with the tongue, and beams provided with cultivating appliances at one end and pivotally supported at the other from said ring so as to be capable of vertical movement independent of the ring.

2. A double-row cultivator, having a seat-plank pivotally connected to each cultivating member of the machine; a ring forming a part of each member and a support for one end of the seat-plank; and means for holding the plank across the faces of said rings without impeding its pivotal movement thereon.

3. A double-row cultivator, comprising two tongues, a ring secured to each tongue, a gang of cultivating devices secured to each ring, a seat-plank connecting and supported by said rings, and devices for holding the seat-plank in contact with said rings, substantially as described.

4. In a cultivator, a tongue, a ring secured to the upper face thereof, depending hangers secured to said ring, a horizontal rock-shaft mounted rotatably in said hangers, a pair of depending wheel-arms adjustably secured on said shaft, ground-wheels mounted upon said wheel-arms, and a depending disk-arm adjustably secured upon said shaft and forming approximately a right angle with said wheel-arms, substantially as described.

5. A double-row cultivator, having a seat-plank pivotally connected to each cultivating member of the machine; a ring forming a part of each member and a support for one end of the seat-plank; and means, movable in the plane of and by the plank and adapted to hold the latter flatly against the faces of the rings.

6. In a cultivator, a transverse rock-shaft, a depending wheel-arm secured thereon, a ground-wheel upon said wheel-arm, a hand-lever mounted above said wheel, a crank operated by said lever, a rod connecting said crank with the lower portion of said wheel-arm, a depending disk-arm secured on said rock-shaft and forming approximately a right angle with said wheel-arm, a disk mounted upon the disk-arm, and a shovel-beam secured to the portion of said disk-arm adjacent to said rock-shaft, and means for throwing forward the center of gravity by moving said wheel-arms toward a vertical position, substantially as described.

7. In a cultivator, a tongue, a ring secured to the upper face thereof, depending hangers secured to said ring, a transverse rock-shaft rotatably mounted in said hangers, a pair of obliquely and forwardly depending wheel-arms secured on said shaft, ground-wheels mounted on said wheel-arms, a hand-lever having its fulcrum secured to said tongue, a pair of crank-arms operated by said lever, rods connecting said crank-arms to said wheel-arms, and cultivating devices secured to said rock-shaft, and extending backward therefrom, whereby said wheel-arms may be pushed back toward a vertical position, for lifting the cultivating devices from the ground and throwing the center of gravity forward with respect to the ground-wheels, by operating said lever, substantially as described.

8. A double-row cultivator, comprising two tongues, a ring secured to each tongue, a gang of cultivating appliances secured to each ring, a seat-plank connecting and supported by said rings, and devices slidingly mounted on the rings and adapted for holding the seat-plank in contact with said rings.

9. In a cultivator, a tongue, a ring secured to the tongue, hangers secured to said ring, a rock-shaft journaled in said hangers, wheel-arms secured to said shaft, ground-wheels carried by said wheel-arms, and a disk-carrying frame secured upon said shaft.

10. In a cultivator, the combination of a

tongue, a ring mounted on the same, a pivot-pin projecting upward from the tongue centrally of the ring, a seat-plank upon the tongue and pivoted to said pivot-pin, and guides extending transversely of and above said plank and having a sliding connection at their ends with said ring, substantially as described.

11. In a cultivator, the combination of a tongue, a ring mounted thereon, hangers depending rigidly from said ring, a rock-shaft journaled in said hangers, cultivating appliances supported from said rock-shaft, arms depending from the rock-shaft, and ground-wheels carried by said arms, substantially as described.

12. In a cultivator, a suitable carrying-frame, a tongue therefor, a rock-shaft suitably journaled, laterally-adjustable wheel-carrying arms supported from said rock-shaft so as to be capable of movement in a vertical plane with said shaft as their axis, beams diverging rearwardly from the wheel-carrying arms, and provided with cultivating appliances at one end and adjustably secured at their opposite ends to said shaft and adapted to move in a vertical plane as said wheel-carrying arms are likewise moved and said shaft is turned, and means for synchronously effecting the movement referred to of said wheel-carrying arms, said shaft, and said beams, and for holding the latter with their cultivating appliances out of contact with the ground.

13. In a cultivator, a transverse rock-shaft, a plurality of wheel-arms adjustable thereon laterally of the machine, ground-wheels upon said arms, cultivating devices supported from said shaft and adjustable laterally of the machine, a hand-lever mounted on the tongue, a crank-shaft operated by said lever, and rods connecting said crank-shaft with the lower portion of the wheel-arms.

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

THOMAS S. WARNER.

Witnesses:

CARL L. SWANSON,

HERMAN S. SWANSON.