

No. 609,064.

Patented Aug. 16, 1898.

E. E. WHIPPLE.
CULTIVATOR.

(Application filed July 31, 1897.)

(No Model.)

4 Sheets—Sheet 1.

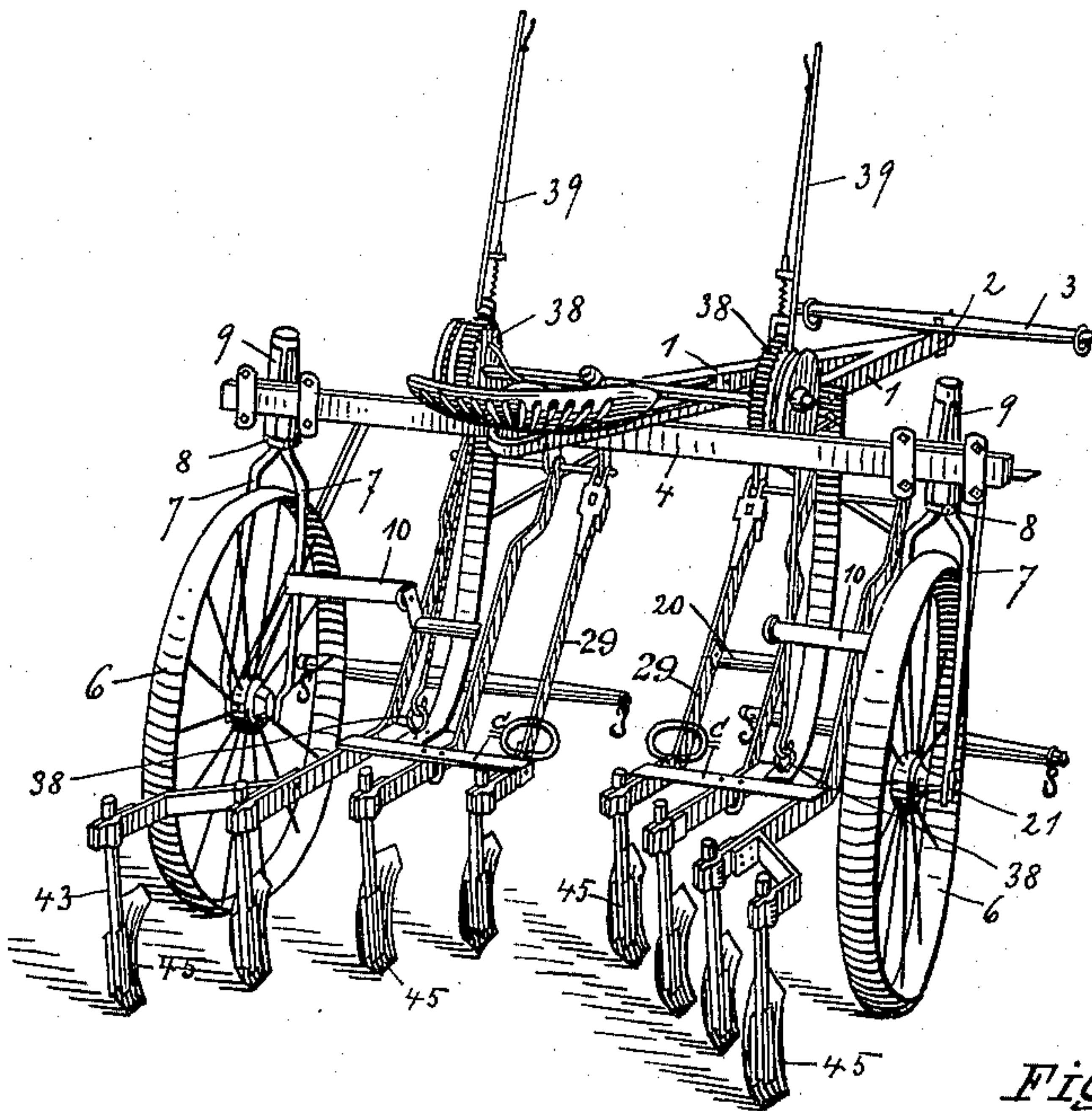


Fig. 1.

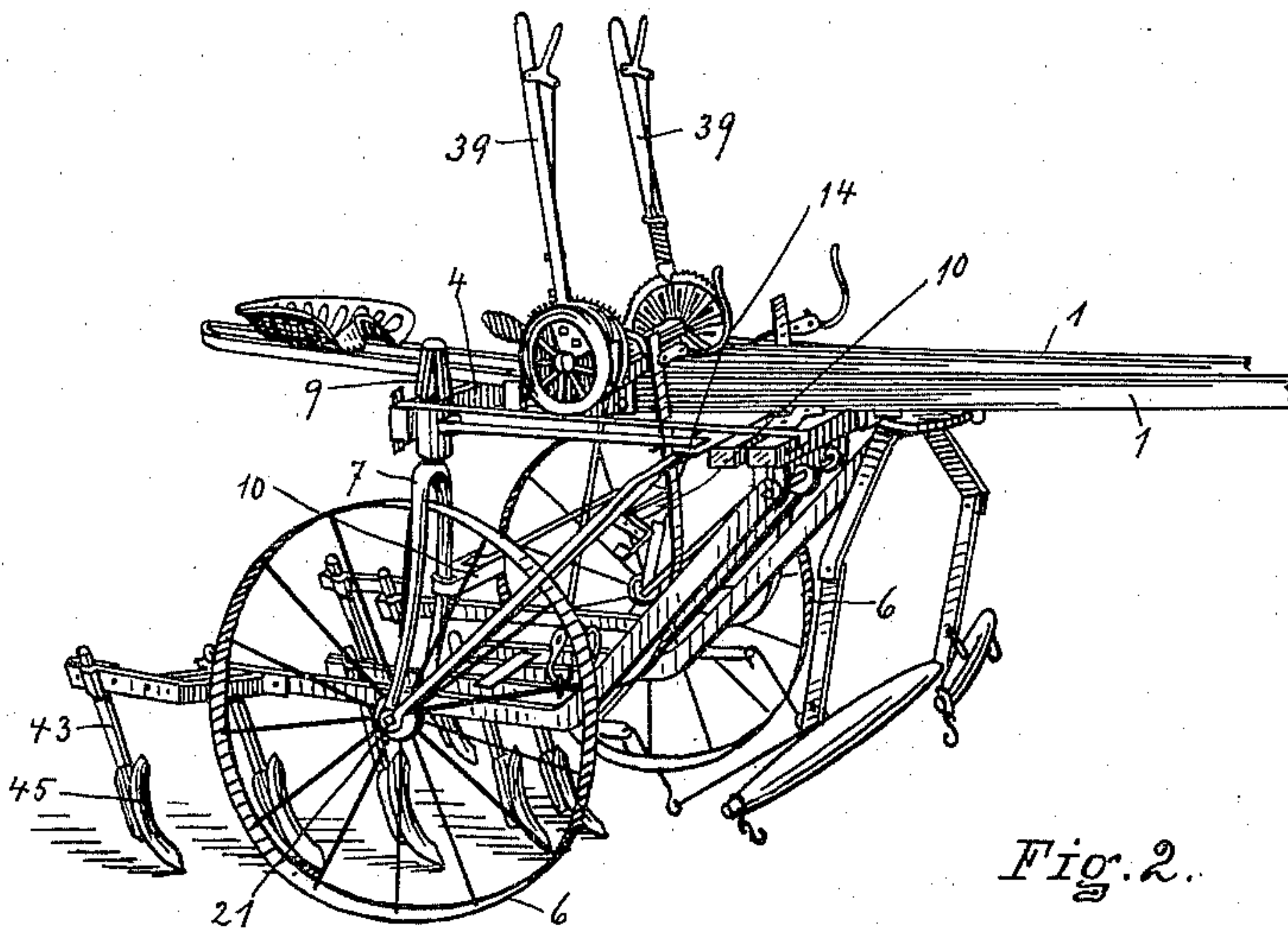


Fig. 2.

WITNESSES

Rich. A. George.

Phoebe A. Tamer

INVENTOR

EFFINGER E. WHIPPLE.

BY Rich. A. George

ATTORNEY'S

No. 609,064.

Patented Aug. 16, 1898.

E. E. WHIPPLE.
CULTIVATOR.

(Application filed July 31, 1897.)

(No Model.)

4 Sheets—Sheet 2.

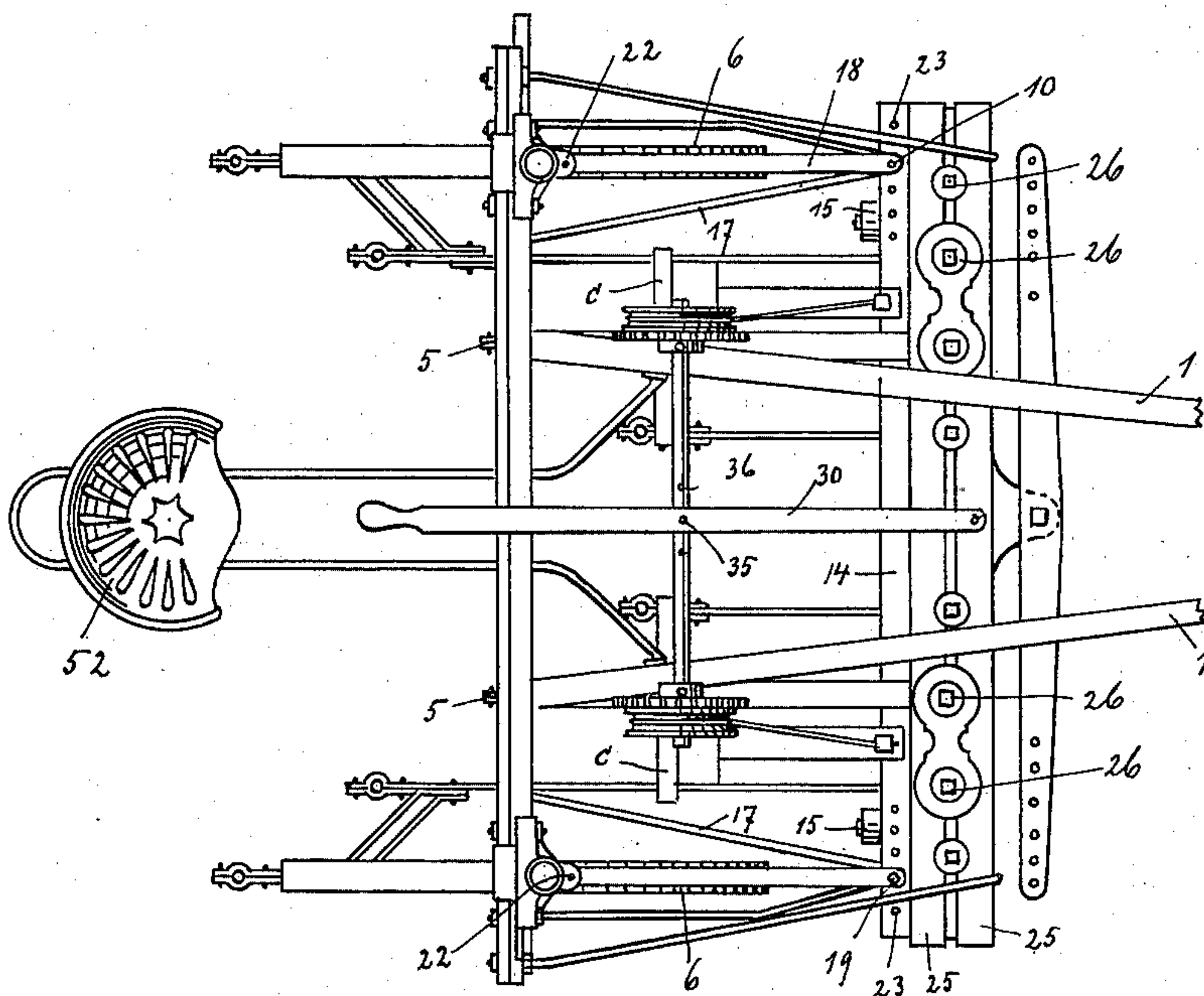


Fig. 3.

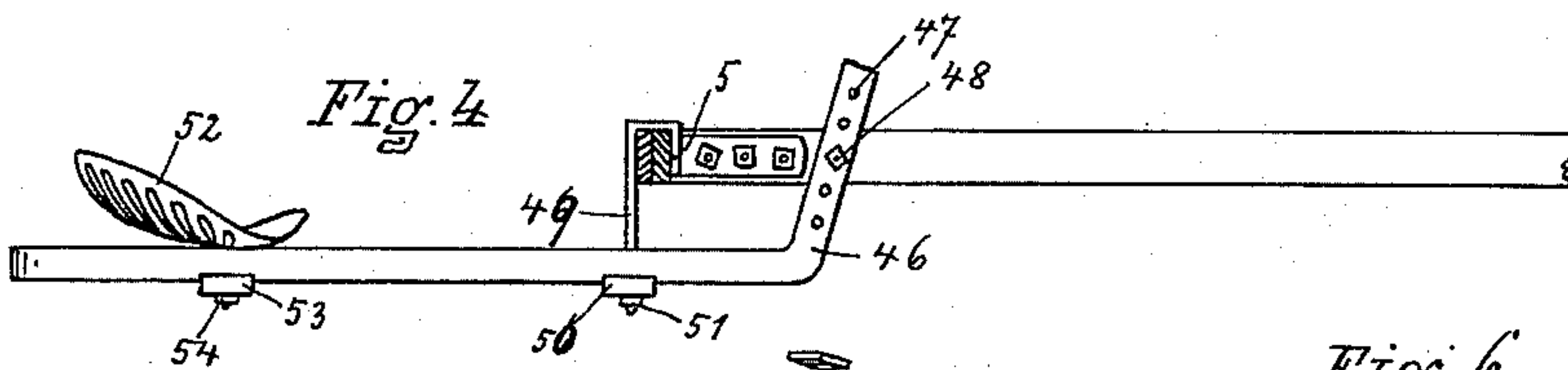


Fig. 4.

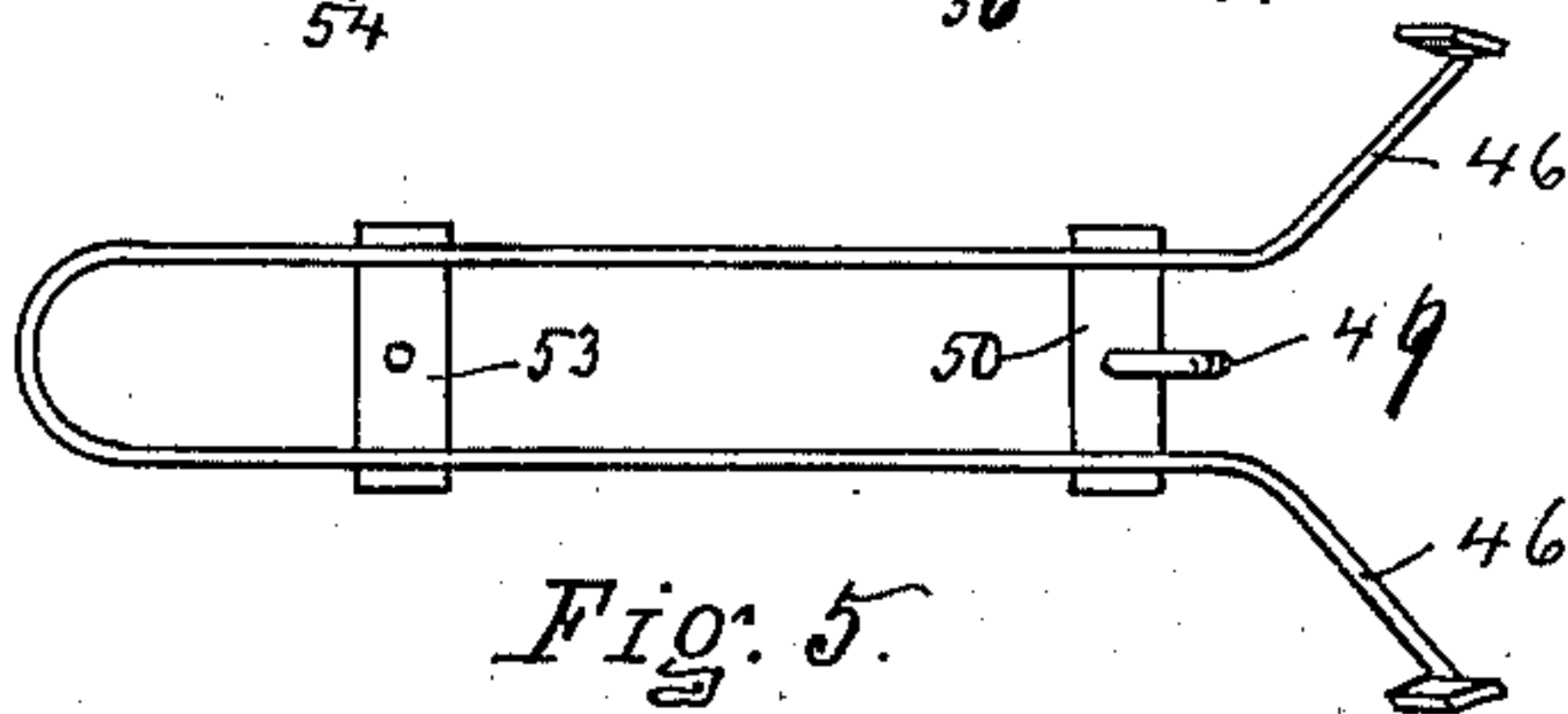


Fig. 5.

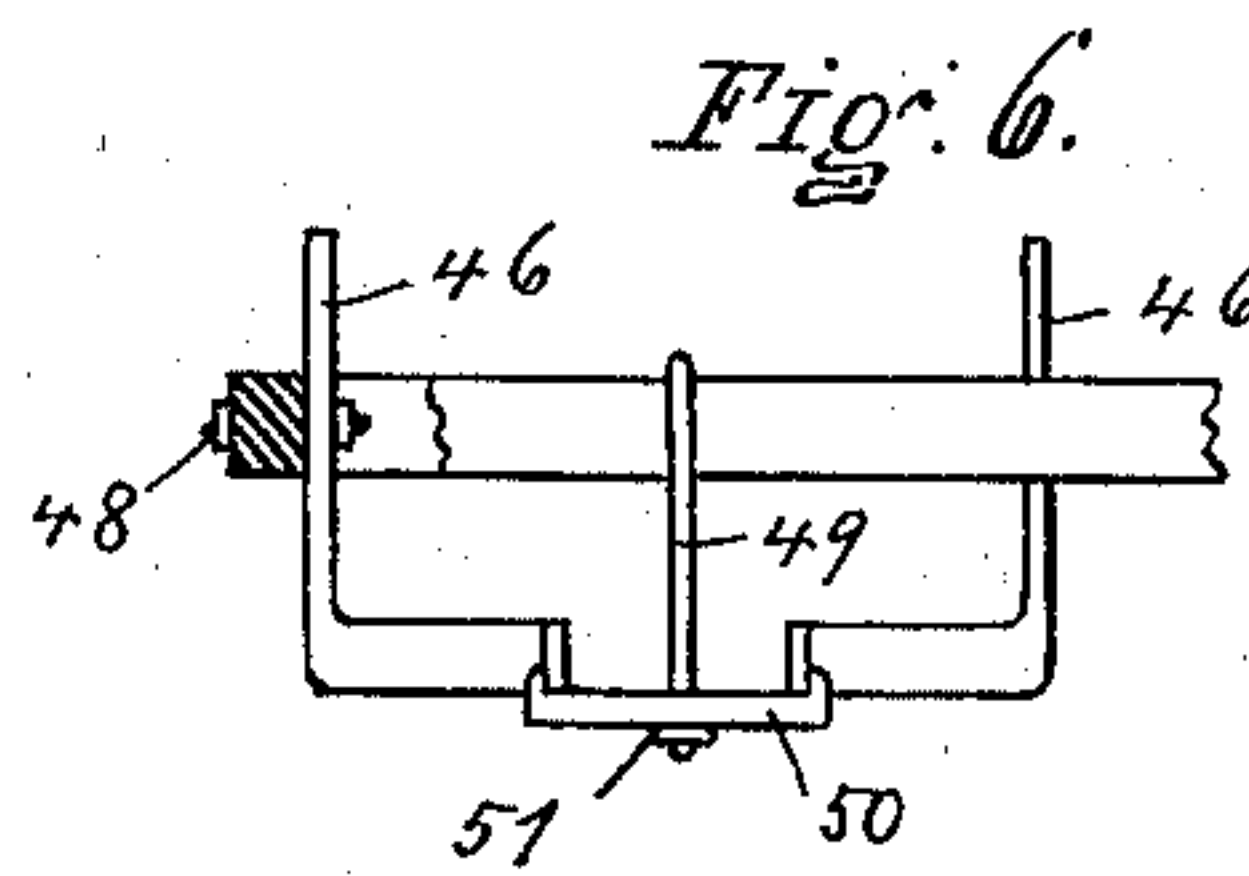


Fig. 6.

WITNESSES.

Rich. A. George.

Philo A. Garner.

INVENTOR

EFFINGER E. WHIPPLE

By *Riley Loe*

ATTORNEY'S.

No. 609,064.

Patented Aug. 16, 1898.

E. E. WHIPPLE.
CULTIVATOR.

(Application filed July 31, 1897.)

(No Model.)

4 Sheets—Sheet 3.

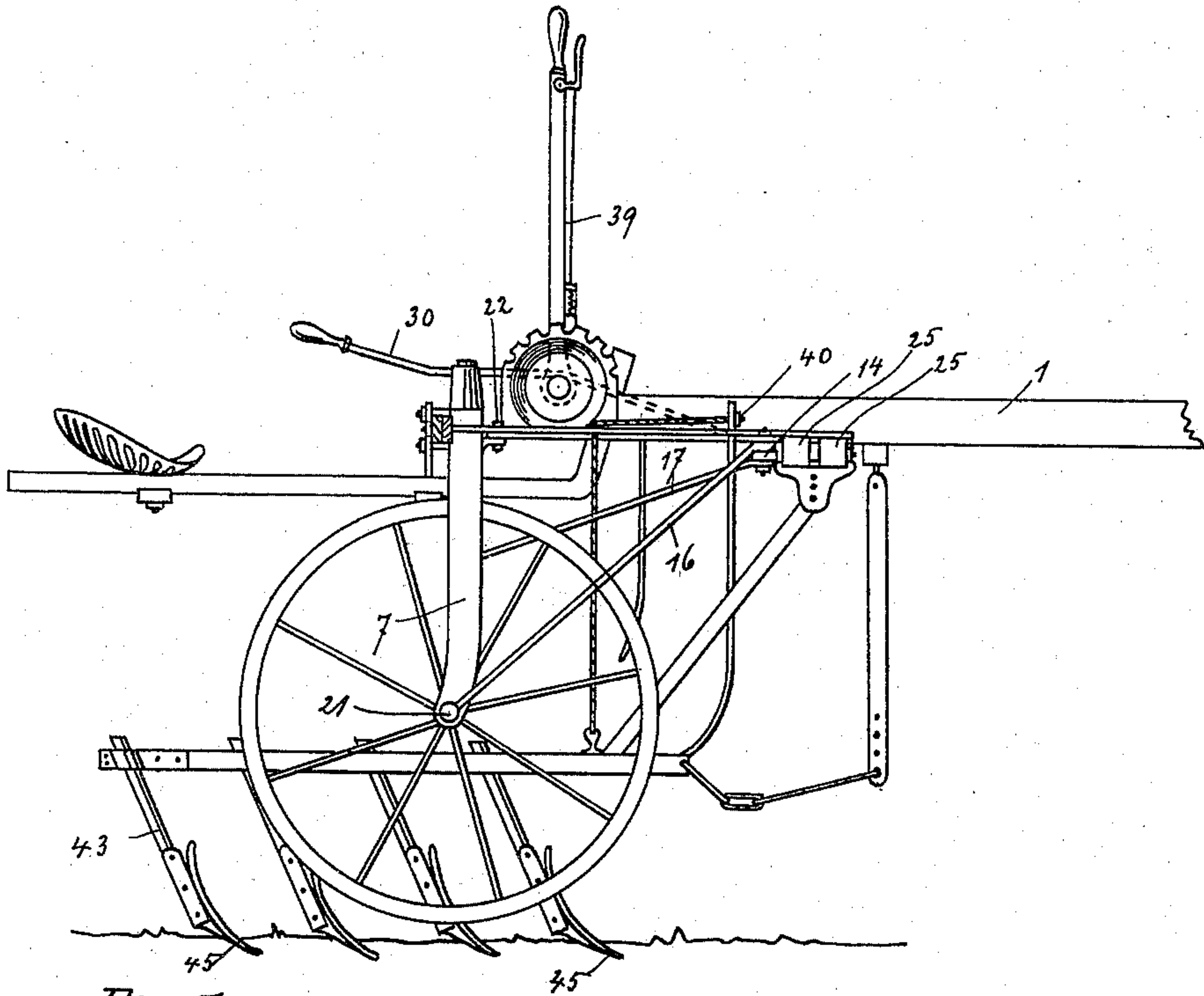


Fig. 7.

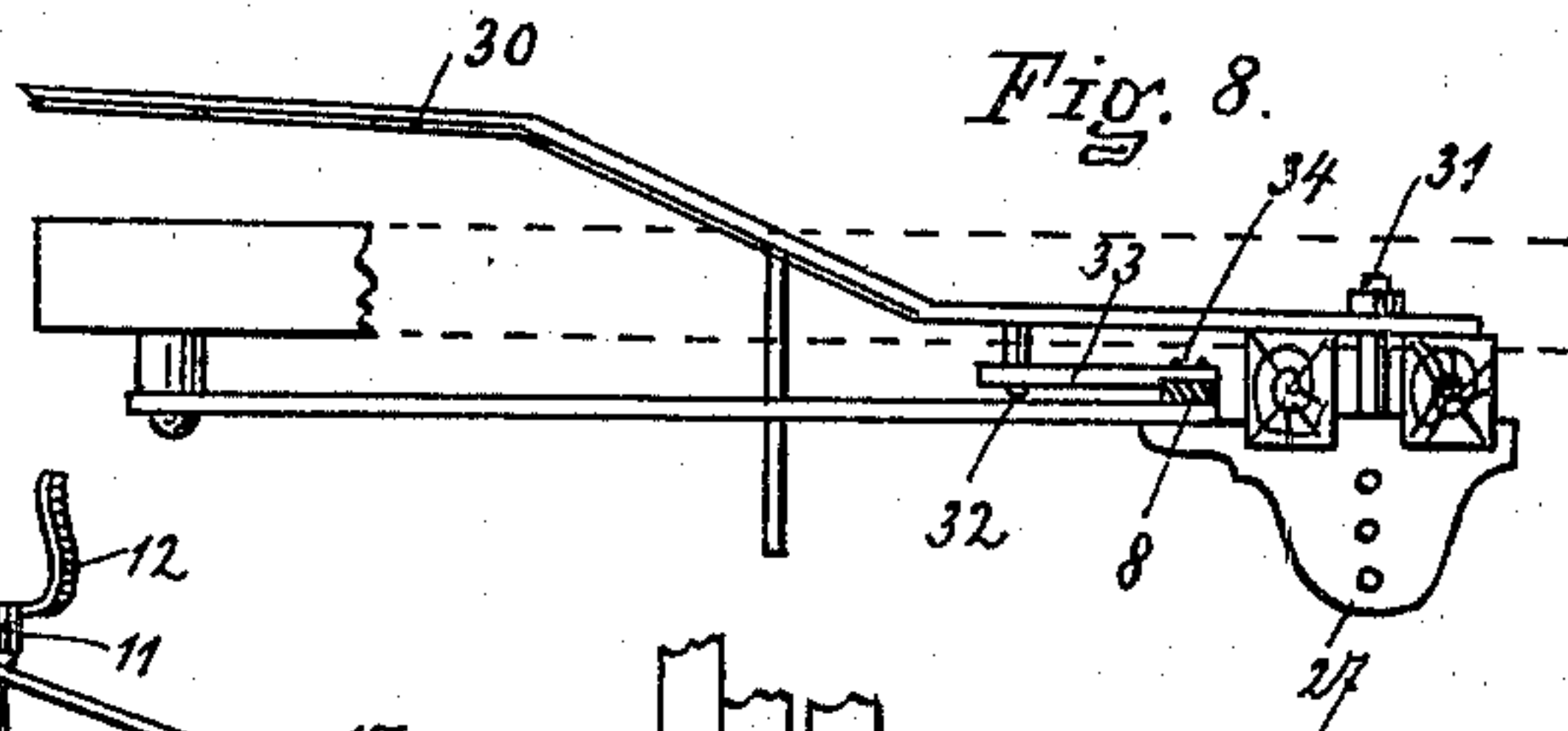


Fig. 8.

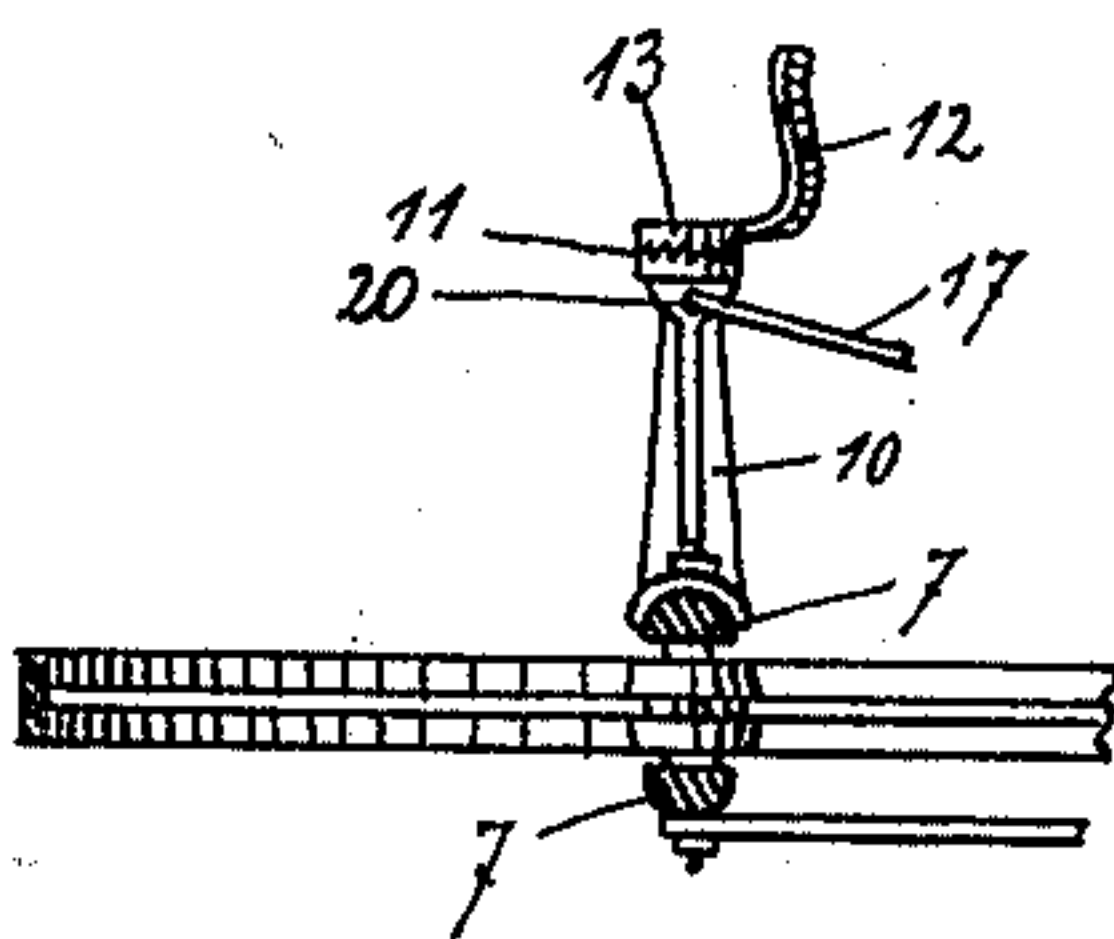


Fig. 9.

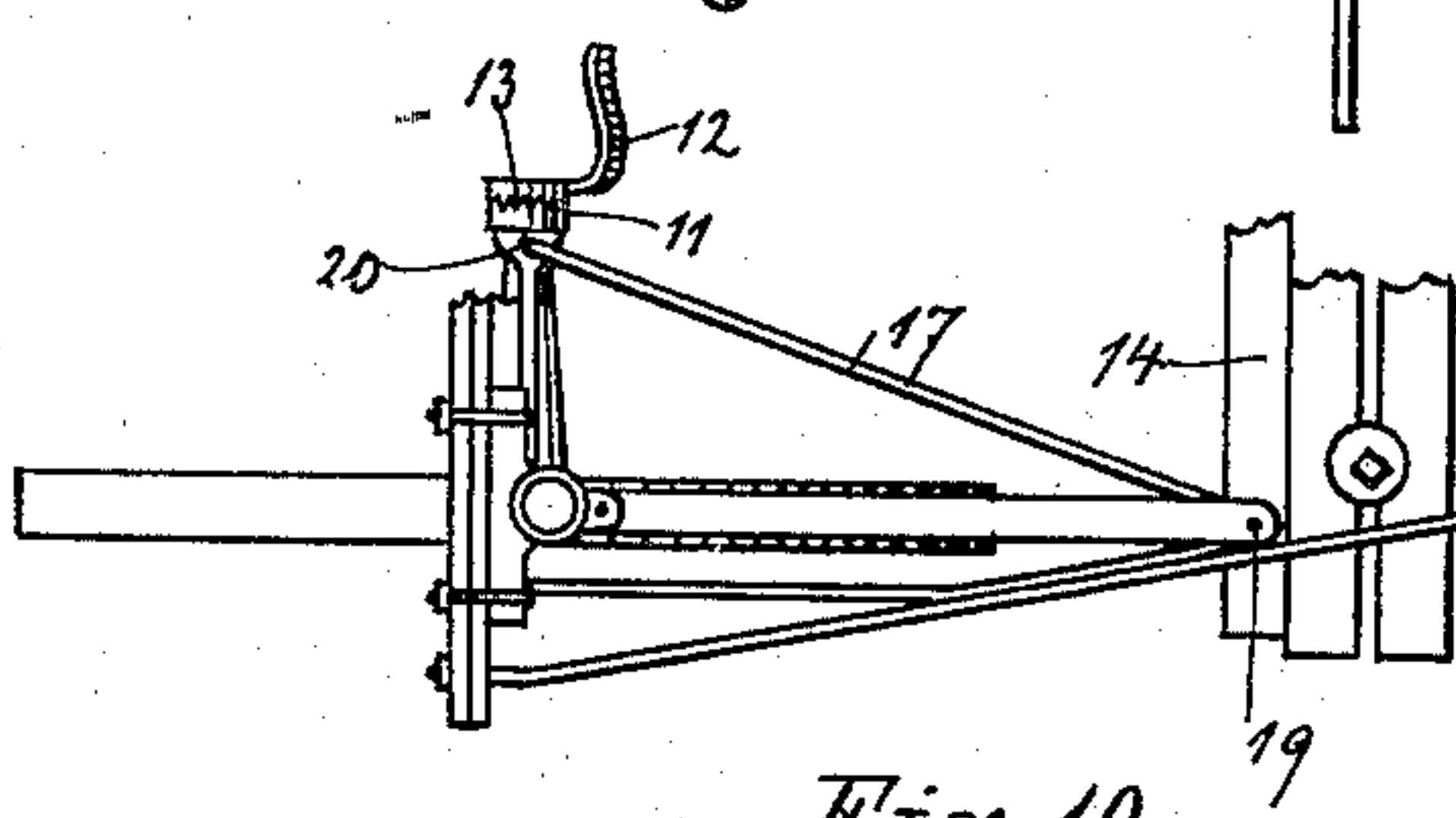


Fig. 10.

WITNESSES

Rich. A. George.

Phoebe A. Tamm.

INVENTOR

EFFINGER E. WHIPPLE

BY

Wesley Lane

ATTORNEY'S.

No. 609,064.

Patented Aug. 16, 1898.

E. E. WHIPPLE.
CULTIVATOR.

(Application filed July 31, 1897.)

(No Model.)

4 Sheets—Sheet 4.

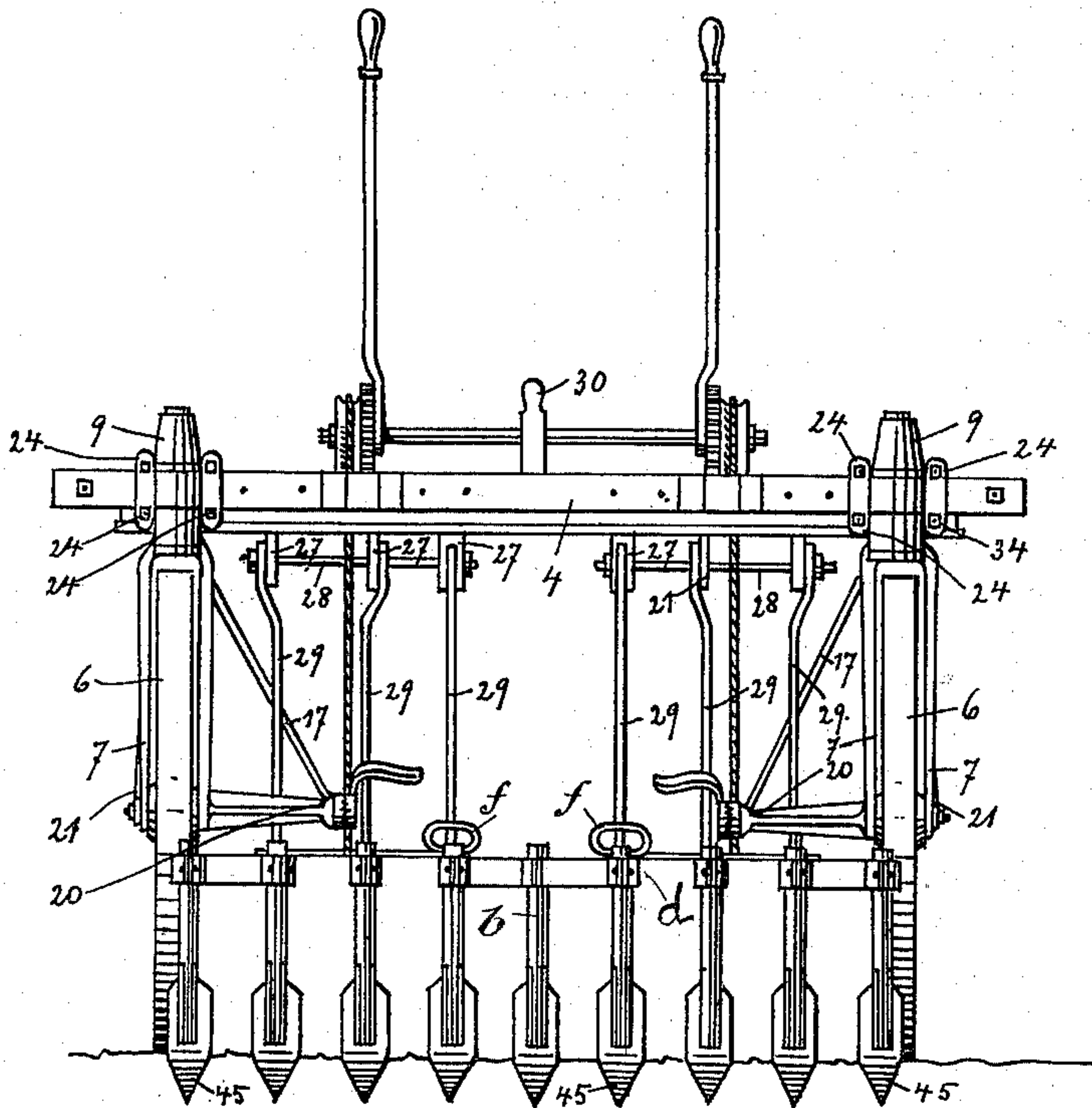


Fig. 11.

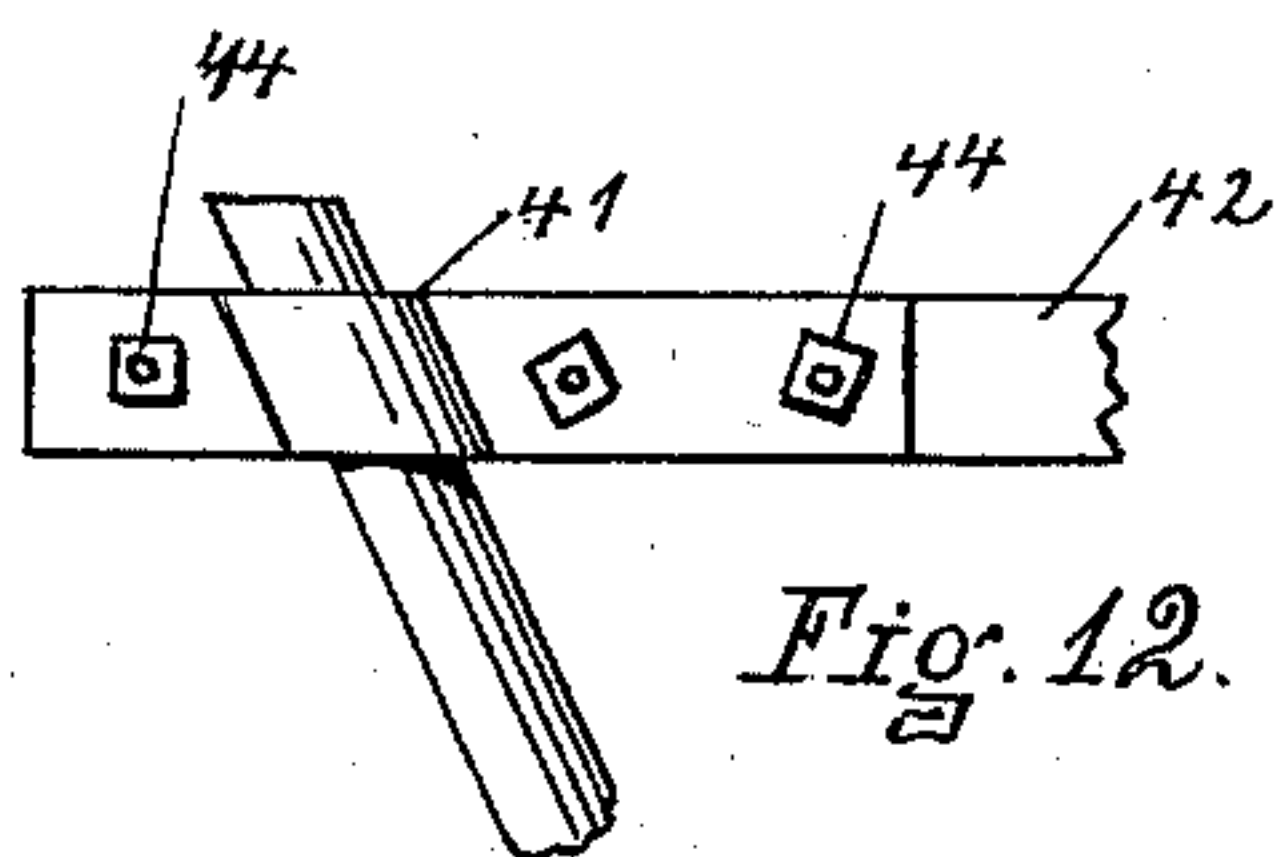


Fig. 12.

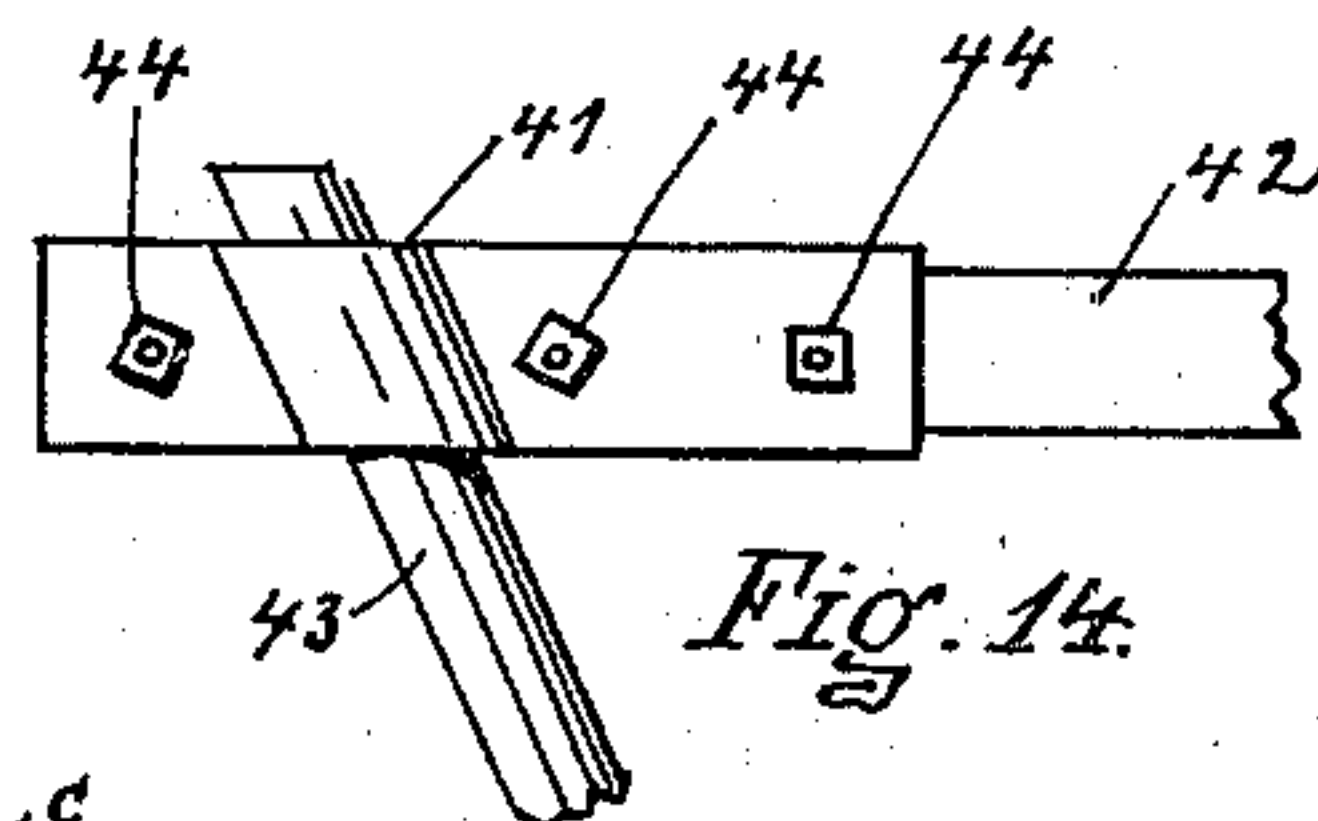


Fig. 14.

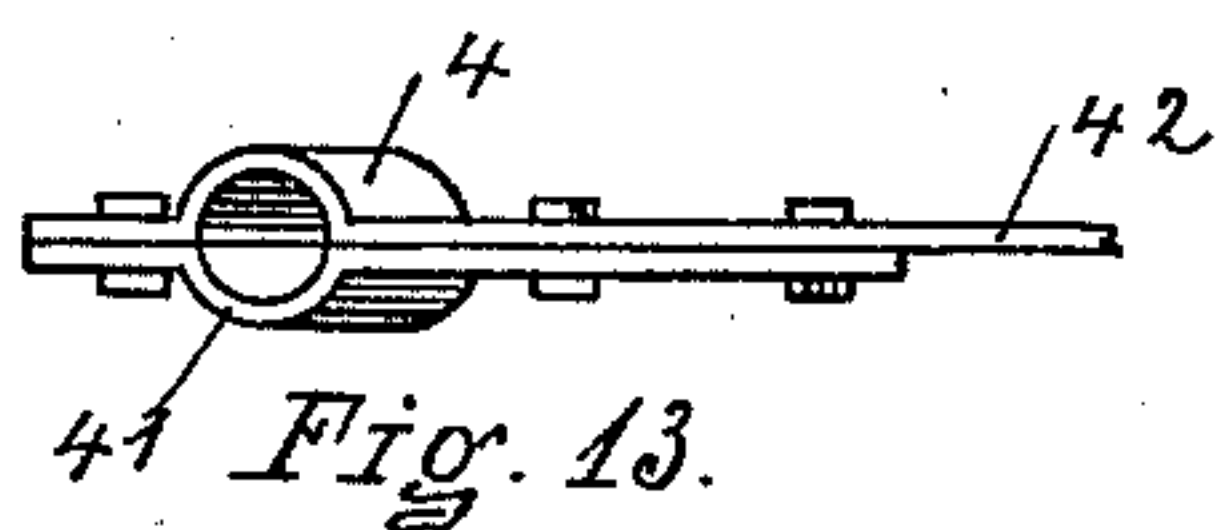


Fig. 13.

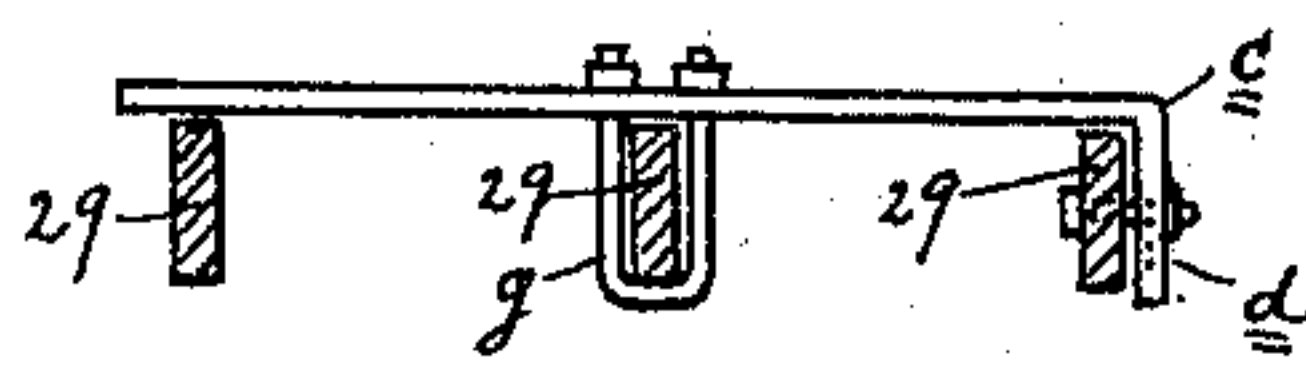


Fig. 15.

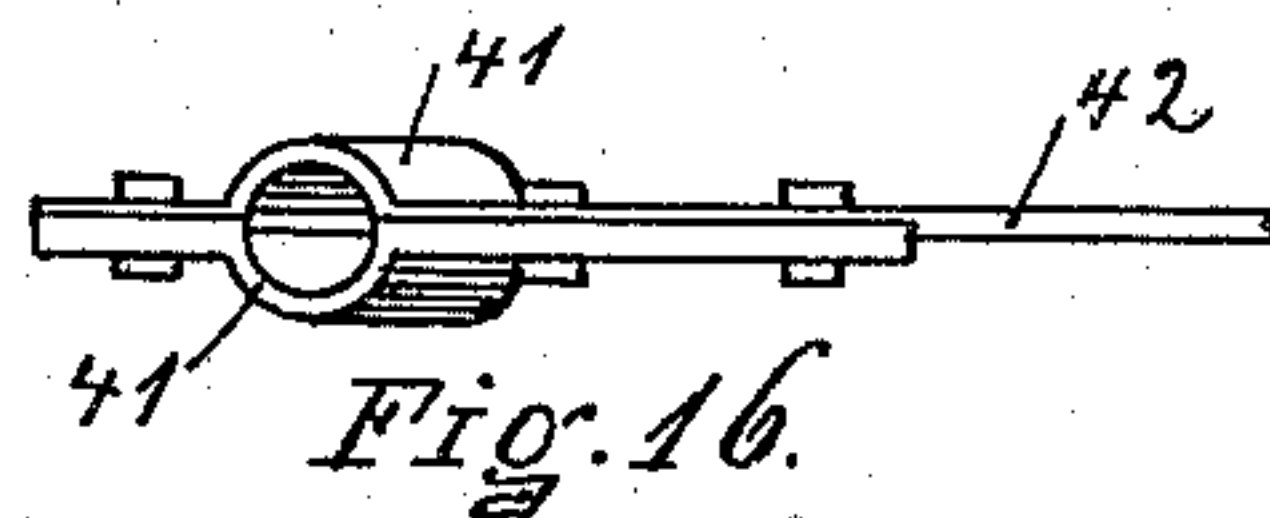


Fig. 16.

WITNESSES.

Rich. A. George.
Phel A. Tamm

INVENTOR
EFFINGER E. WHIPPLE

By *Wesley Lane*
ATTORNEY'S

UNITED STATES PATENT OFFICE.

EFFINGER E. WHIPPLE, OF UTICA, NEW YORK, ASSIGNOR TO THE
STANDARD HARROW COMPANY.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 609,064, dated August 16, 1898.

Application filed July 31, 1897. Serial No. 646,620. (No model.)

To all whom it may concern:

Be it known that I, EFFINGER E. WHIPPLE, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 part of this specification.

My invention relates to certain new and novel features of improvement in a riding-cultivator.

The invention has for its object a more complete control over pivoted-wheel cultivators and other features of novelty hereinafter more fully pointed out and claimed.

The invention is clearly illustrated in the drawings, which, with the reference letters and numerals marked thereon, refer to corresponding parts, forming a part of this specification.

In the drawings, Figure 1 is a rear view of my improved cultivator. Fig. 2 is a side partial front view of the same. Fig. 3 represents a plan view taken from the top of the cultivator. Figs. 4, 5, and 6 represent details of construction. Fig. 7 shows a side elevation of my cultivator. Figs. 8, 9, and 10 represent details of construction. Fig. 11 is a rear view of my cultivator, showing the center tooth *b* in position between the frame-bars. Fig. 12 is a side view of a portion of the tooth-bar and tooth-shank, the broken lines indicating the parts removed. Fig. 13 is a perspective view of Fig. 12 with the tooth removed. Fig. 14 is a side view of the tooth-bar and tooth-shank, one portion of the tooth-fastening showing that the same is wider than the other section of the tooth-bar. Fig. 16 is a perspective view of Fig. 14 with the tooth removed, the short strip of metal forming a part of the tooth-holder, showing its engaging surfaces on the main tooth-bar. Fig. 15 is a rear view of a section of each of the three tooth-bars and the cross-bar *c*, bolted to the inner tooth-bar *d*, extending above the other two adjacent bars, also showing the location of the

U-bolt *g* for surrounding and engaging the tooth-bar 29 for holding the connecting-bar *c* in union therewith, and *a* represents a front view of the cross-bar *c*, taken from the right of the cross-bar, as shown in Fig. 15, *e* representing the series of vertical holes for providing means for vertically adjusting the same. By this arrangement the tooth-bars on each section of the series of tooth-bars can be held in the same horizontal plane, the cross-bar *c* being made vertically adjustable.

The purpose of my invention is to make an improvement upon the cultivator shown and described in United States Letters Patent No. 582,300; dated May 11, 1897, granted to Thomas M. Moore; and said improvement consists in the portions hereinafter more particularly pointed out and claimed.

I provide a split tongue 1 1, as shown in Figs. 1, 2, 3, and 7. The front ends of the two sections are united at 2, Fig. 1, to which the neck-yoke 3 is fastened. The rear ends of the two sections of the tongue are secured to axle 4 at 5 5, Fig. 3. The wheels 6 6 are mounted between bifurcated forks 7 7, which are formed of half-round steel united at the top by shrink-band 8, Fig. 1, which forms a shoulder or bearing for the adjustable box 9 9, having an internal recess which admits the upper end of the bifurcated forks, which forks have a vertical rotary motion in the bearings for allowing the wheels and bifurcated forks to be turned.

I accomplish the turning of the bifurcated forks and wheels by means of the arm 10, rigidly secured to the inside bifurcated fork 7, as shown in Figs. 9 and 10. On the inner end of the arm 10, Figs. 9 and 10, I provide a ratchet-face 11 and adjustable step 12, Figs. 9 and 10, carrying ratchet-face 13, Figs. 9 and 10. The two ratchet-faces are held together by means of a tap-bolt. (Not shown.) By loosening the tap-bolt the step 12 can be adjusted up or down to accommodate riders having different lengths of legs, from the longest to the shortest. By pressing in either direction upon the adjustable step the travel of the wheel can be shifted in either direction through the medium of the shifting-bar 14, located underneath the tongue, as best illustrated in Fig. 3. This shifting-bar is free to

move in the direction of its length in either direction and is supported at its rear, toward each end, by antifriction-rolls 15. (Best illustrated in Fig. 3.) I use three rods, designated as "outside" rod 16, "inside" rod 17, and "center" rod 18. These three rods are pivoted to the shifting-bar 14 at 19. (Best illustrated in Figs. 3 and 10.) The rear end of the inner rod 17 is secured at 20, Figs. 9 and 10, to the arm 10. The rear end of the outside rod 16 is secured at 21 to the end of the wheel-bearing, outside of the wheel, as best illustrated in Fig. 7. The center rod or connection 18 is connected at 22 at its rear to a projecting flange to the front of the adjustable box 9. By this arrangement of the wheels and bifurcated fork with the adjustable step attached thereto, through the medium of connecting-rods 16, 17, and 18, arranged, as heretofore stated, on each side of the cultivator, the operator can shift at will the travel of the wheels by crowding upon the adjustable step in either direction. The three braces or connecting-rods 16, 17, and 18, connecting at the same pivotal point on the shifting-bar, and the rods 16 and 17 describing a triangle as they pass backward to the rear, the rod 16 connecting to the end of the wheel-axle and the inner rod connecting to the arm carrying adjustable step form rigid supports, so that the wheels can be shifted without loss of power or motion, and thus get rid of the lash in operating this class of cultivators, which has heretofore been found very objectionable. By this arrangement the center connection 18 forms a swinging point of the shifting-bar, which prevents the wheels from ever being held on dead-centers.

Another feature of my invention consists in providing means for adjusting the relative location of the wheels in or out. This is accomplished by providing a series of holes, as illustrated at 23 23, Fig. 3, at each end of the shifting-bar, and by shifting the pivotal points of the front ends of rods 16, 17, and 18 in or out on the shifting-bar, together with means for shifting the adjustable box 9 on the axletrees, which is accomplished by clamping-bolts 24 with nuts attached thereto. By loosening the nuts the adjustable boxes 9 can be adjusted in or out to correspond with the adjustment on the shifting-bar, so that by this arrangement the width of the cultivator gangs can be either contracted or expanded, so that the cultivator can be used in a narrower or in a wider space. In accomplishing this, attention must be given to having the shifting-boxes 9 on the axletrees shifted to the same relative line on the axletree, as the front ends of rods 16, 17, and 18 are pivoted to the shifting-bar.

For widening or narrowing the cut of the tooth-bars to correspond with the in-and-out adjustment of the wheels I provide two rigid cross-bars 25 25. (Best illustrated in Figs. 3 and 7.) These bars fasten to the two sec-

tions of the tongue by any mechanical appliance and are separated from each other sufficiently to allow bolts 26, having heads, to pass between the two bars. These bolts connect with a casting provided with extending flanges 27, (best shown in Fig. 11,) extending below the cross-bars, and are provided with holes for the receipt of connecting-rod 28, (best shown in Fig. 11,) which connects the drag-bars 29 to flanges 27. By loosening bolts 26, Fig. 3, flanges 27 can be moved or adjusted on the cross-bars and thus shift the drag-bars in or out to widen or contract the space occupied by the tooth-bars, and when shifted to the desired position by bolts 26 can be tightened and the flanges held rigidly in any position to which they may be adjusted. For holding the shifting-bar in a fixed position I provide shifter 30, Figs. 7 and 8, which is pivoted at 31, Figs. 3 and 8, to the cross-bar. The handle carries on the under side of it a downward-projecting pin 32, Fig. 8, which engages with connecting-arm 33 at its rear end, which is rigidly secured at 34 to the shifting-bar 14, Fig. 8. Moving the shifter 30 either to the right or left moves the shifting-bar in the same direction. By inserting a pin through opening 35 in the shifter, which pin will engage the openings in the rod 36, Fig. 3, the shifting-bar may be held rigid and the tool used as a rigid cultivator.

The tooth-bars are elevated by cables 37, connected to the tooth-bars at 38, Fig. 1, the cables passing over sheave-wheels 38, Fig. 1, operated by levers 39 with the ordinary mechanism, the cable passing over the sheave-wheels, and the upper end is connected to spring 40, Fig. 7, and the lower end of the spring is rigidly connected at 38 with the tooth-bars. By taking up the cable at the front end at 40 the required tension can be exerted on the spring to keep the tooth-bars at a uniform depth in the ground, and by locating the cable in proper position on the sheave-wheels and securing it rigidly thereto the depth of the working points of the teeth in the ground can always be regulated at the will of the operator. The mechanism for securing the cable to the shifting wheels is not shown, but reference is made to the patent heretofore referred to, of which this invention forms an improvement.

For adjusting the front end of the drag-bars up or down I provide a series of vertical holes in flanges 27, which are best illustrated in Fig. 8. This is accomplished by removing the connecting-rod 28 and reinserting it to accommodate the up-and-down adjustment.

My improvement in the tooth-bars consists in forming crescent-shaped depressions 41. (Best shown in Figs. 12, 13, 14, and 16.) One of said crescent openings is formed in the regular tooth-bars 42 and the other is formed in a piece of metal which is bolted to the tooth-bar. Heretofore the tooth-shank has been held by providing the crescent openings in two separate pieces of metal which have been bolted to

either side of the drag-bar. By my arrangement one of the pieces of the metal is dispensed with and the regular tooth-bar is substituted in its place. By this arrangement half of the holding power of the tooth-shank is always a fixed and permanent part of the tooth-bar. I place between the two bars, at an angle deflected from vertical lines backward, the tooth-shank 43, which is round and may be adjusted in the direction of its length, or the tooth may be laterally adjusted by means of clamping bolts and nuts 44 by partially rotating the tooth-shank into any desired position and clamping the same by the bolts and nuts in the position to which it is adjusted. The tooth-shank 43 carries the working point 45.

For the hammock-seat to the riding-cultivator I provide a U-shaped metal bar 45, (best illustrated in Fig. 5,) with the front end deflected upward and outward, as shown at 46, Figs. 4 and 5. In the deflected end I provide a series of holes 47 for adjusting the attaching-points of the bar through the medium of bolt 48, Fig. 4, which passes into or through each section of the tongue. I also provide a connecting-rod 49, Figs. 4 and 6, the upper end of which is hooked over the axletree, and the lower end carries the washer 50, extending under the U-shaped bar, and is made adjustable by the nut 51, by means of which the pitch of the seat and the elevation of the rear portion of the U-shaped bar can be adjusted either up or down. At the rear portion of the U-shaped bar I provide an adjustable detachable seat 52, Fig. 4, which is bolted to the washer 53 by means of clamping bolt and nut 54. By loosening nut on the clamping-bolt 54 the seat can be shoved forward or backward, and by tightening the nut it can be held rigidly on the U-shaped bar. By this arrangement the seat is supported on the U-shaped bar to the rear of the axletree and is made adjustable forward or backward by the means already described and may be adjusted up and down by the means specifically pointed out.

Another feature of my invention consists in so arranging the tooth-bars that the cultivator can be used as a harrow, which consists in arranging the center tooth *b* (best shown in Figs. 1 and 11) so that this tooth and the connecting portions of the frame can be removed, so that the cultivator can be used on each side of a row of growing crops as a cultivator. By replacing the tooth the cultivator can be used as a harrow, with certain adjustable features which I will now proceed to more fully describe.

I arrange the two tooth-bars adjacent to the center, so that they can be elevated or depressed by providing the two inner tooth-bars 29 29 (best illustrated in Fig. 1) by removing the center tooth and the bars connected therewith at *d* in Figs. 1 and 11. The cultivator can be used for cultivating a row of growing grain or crop, and when thus used it is frequently desirable to have the two inner tooth-bars or

drag-bars 29 29 run deeper or more shallow, according to the conditions of the crop and soil, than the outer tooth-bars with the teeth attached. It is frequently found very desirable to have the inner tooth-bars free to be adjusted in or out to accommodate the irregularities or crooks in the row of growing crops, and to accommodate these conditions I provide a tooth-bar coupling *c*, preferably made of steel, with an angle-bend *d*, provided with a series of holes *e*, vertically arranged, the holes being shown in dotted lines in the tooth-bar coupling. The angle-bend in the coupling is preferably bolted rigidly to the inner tooth or drag bars 29 29, and when thus fastened to the inner drag or tooth bars they can be adjusted up or down by shifting the attaching-bolt through the proper hole, so that the two inner tooth or drag bars 29 29 can be freely swung in or out with the foot by inserting the toe in loops *f f*, Fig. 11, and when thus used the horizontal arms of the tooth-bar coupling *c* rides free on the top of the two adjacent drag or tooth bars.

For making the cultivator a harrow, by having three independent sections I clamp the horizontal portion of the tooth-bar clamp *c* to the adjacent tooth-bar by a U-shaped bolt *g*, which surrounds the tooth-bar, and the tooth-bar coupling *c* permits the two bars to be connected adjustably in the position desired, and when adjusted to that position the same can be clamped together rigidly by the devices already shown, and in this way the three center teeth of the cultivator can be worked independent from the outer two sections of the harrow. When the center tooth and bars *b*, connected therewith, are in the position shown in Fig. 11, forming a complete harrow, the center section being held by the U-shaped bolts in the manner heretofore described, the sections are free to work laterally as well as vertically.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a two-wheel cultivator, the combination of the wheels mounted in turnable wheel-supports; a shifting-bar; three braces connected to each turnable wheel-support, substantially as specified and extending into the same pivotal connection with the shifting-bar, for the purposes stated.

2. In a two-wheel cultivator the combination of the wheels mounted in turnable wheel-supports, boxes in which the wheel-supports can be mounted adjustably in or out on the frame, shifting-bar, three braces connected substantially as stated to each wheel-support, and each set of braces extending into the same adjustable connection with the shifting-bar, for the purposes specified.

3. The combination of the bifurcated turnable wheel-supports carrying wheels, the supports being made adjustable in or out on the axletree; the three connecting-rods arranged substantially as set forth united at their front ends on the same pivotal point on the shift-

ing-bar and made adjustable in or out on the shifting-bar, and the shifting-bar, substantially as set forth.

4. In an adjustable wheel-cultivator of the character described, the combination of the three connecting-rods pivoted to the shifting-bar at substantially the same point at their front ends, the outer rod connected to the end of the wheel-fulcrum and the inner rod connected to the arm and the center rod connected to the frame between the outer and inner rod, substantially as set forth, for the purposes stated.

5. In a wheel-cultivator having turnable wheels; the combination therewith of the arm extending inwardly from the inner bifurcated wheel-support having a ratchet-face on the inner end and a step having a ratchet-face with means for holding the same in adjustable contact, substantially as set forth.

6. In a cultivator, a tooth-bar having a curved or crescent-shaped depression on its side running at an angle from its vertical cross-section in combination with the strip of metal provided with a curved or crescent depression formed in the same line of the depression on the main bar, in combination with the round tooth-shank with means for clamping the two into contact with the tooth-shank, substantially as set forth.

7. In a cultivator having wheels, the combination of the U-shaped bar with perforated deflected ends, in combination with the hook

connected with the axletree and a washer located back of the deflected ends of the bars, and the seat made adjustable thereon, substantially as set forth.

8. In a wheel-cultivator provided with turnable wheels, the combination of the connecting-bars 16, 17 and 18 pivoted at the same point on the shifting-bar, the outer and inner bars extending backward and outward from the center bar, the two outside bars connected to the bifurcated wheel-support upon the opposite side of the wheel and the center bar connected at its rear to the frame, whereby the wheels may be adjusted to run at an angle from the line of draft, substantially as set forth.

9. In a cultivator having independent tooth-bars in combination with cross-bars C rigidly secured to the inner tooth-bars and extending horizontally above the remaining tooth-bars, for the purposes stated.

10. In a cultivator having independent tooth-bars, the combination therewith of vertical adjustable cross-bar C, for preventing the remaining independent tooth-bars from moving upward beyond the limit of the cross-bar, substantially as set forth.

In witness whereof I have affixed my signature in presence of two witnesses.

EFFINGER E. WHIPPLE.

Witnesses:

PHEBE A. TANNER,
H. C. STONER.