

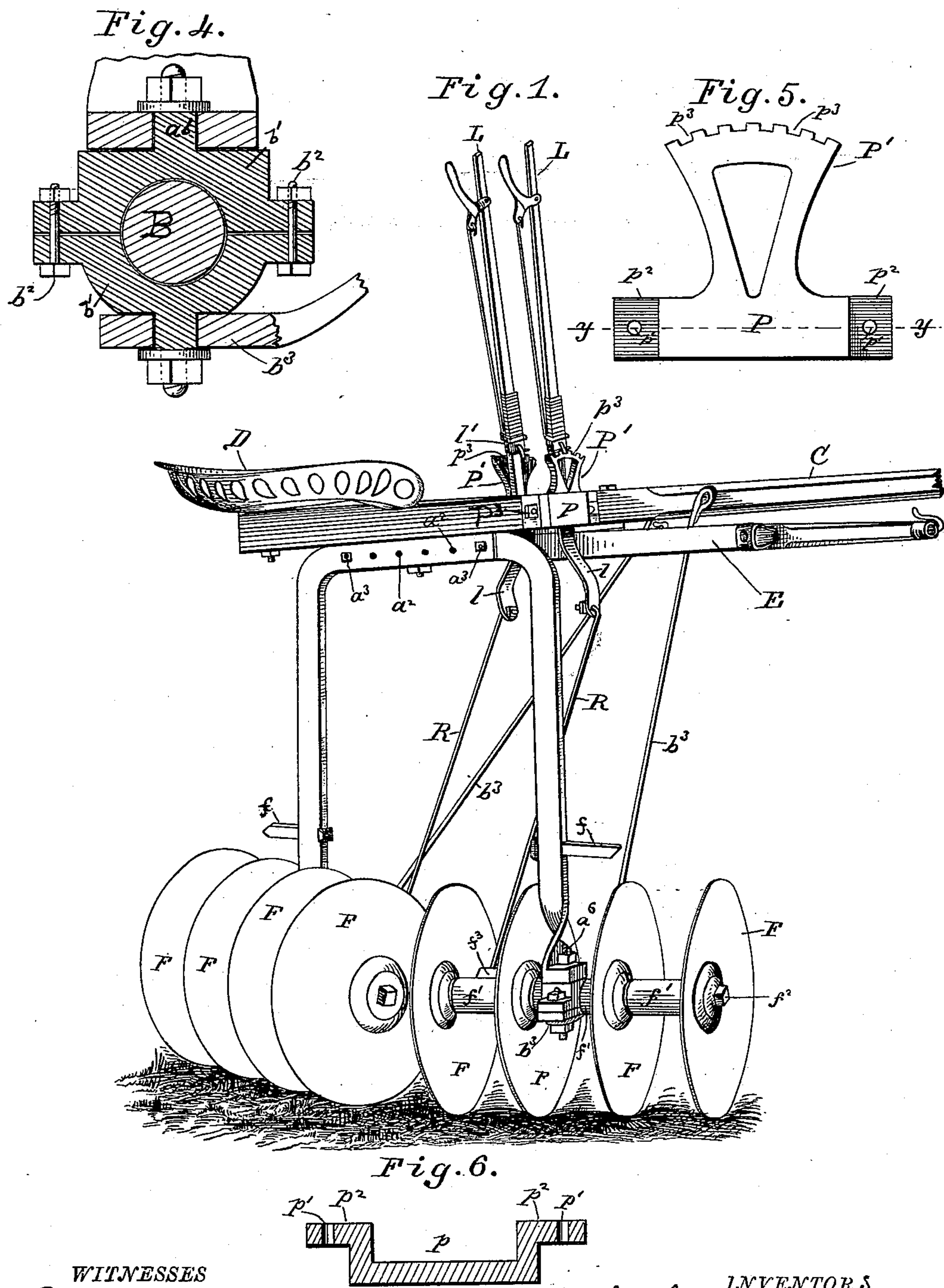
(No Model.)

3 Sheets—Sheet 1.

J. R. GIBBONS & M. L. FLOWERS.
COMBINED PULVERIZER, HARROW, AND CULTIVATOR.

No. 330,689.

Patented Nov. 17, 1885.



WITNESSES
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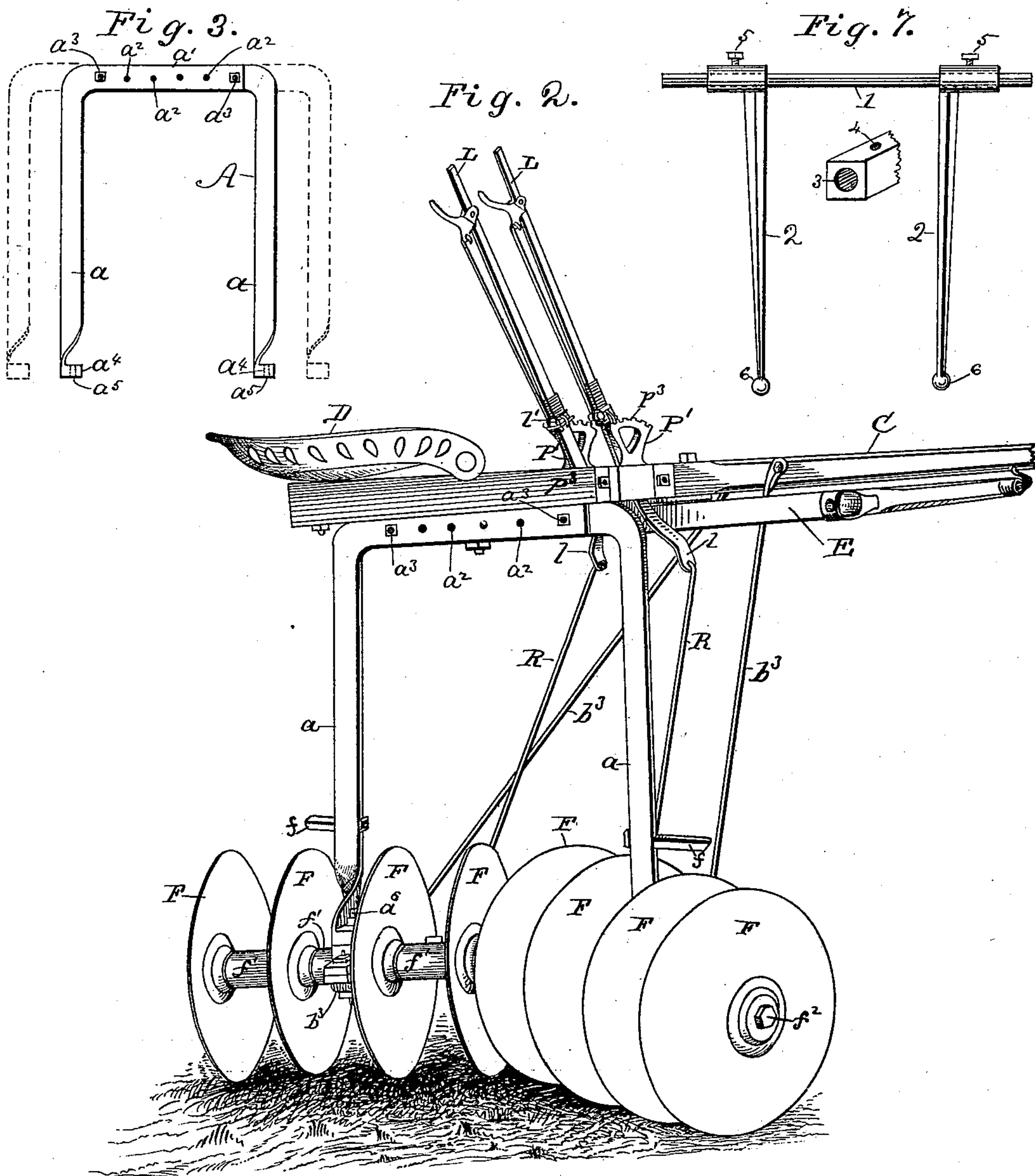
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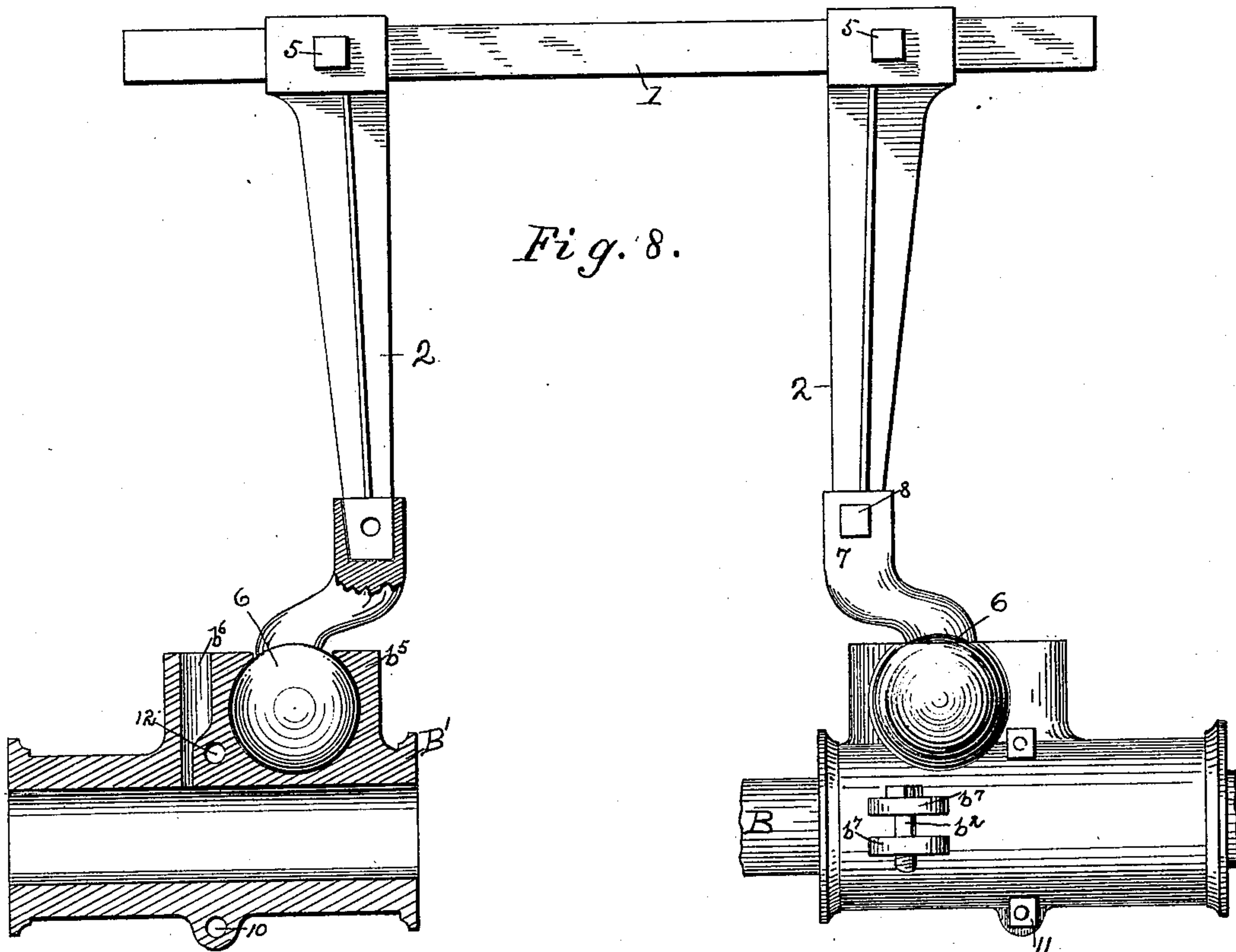
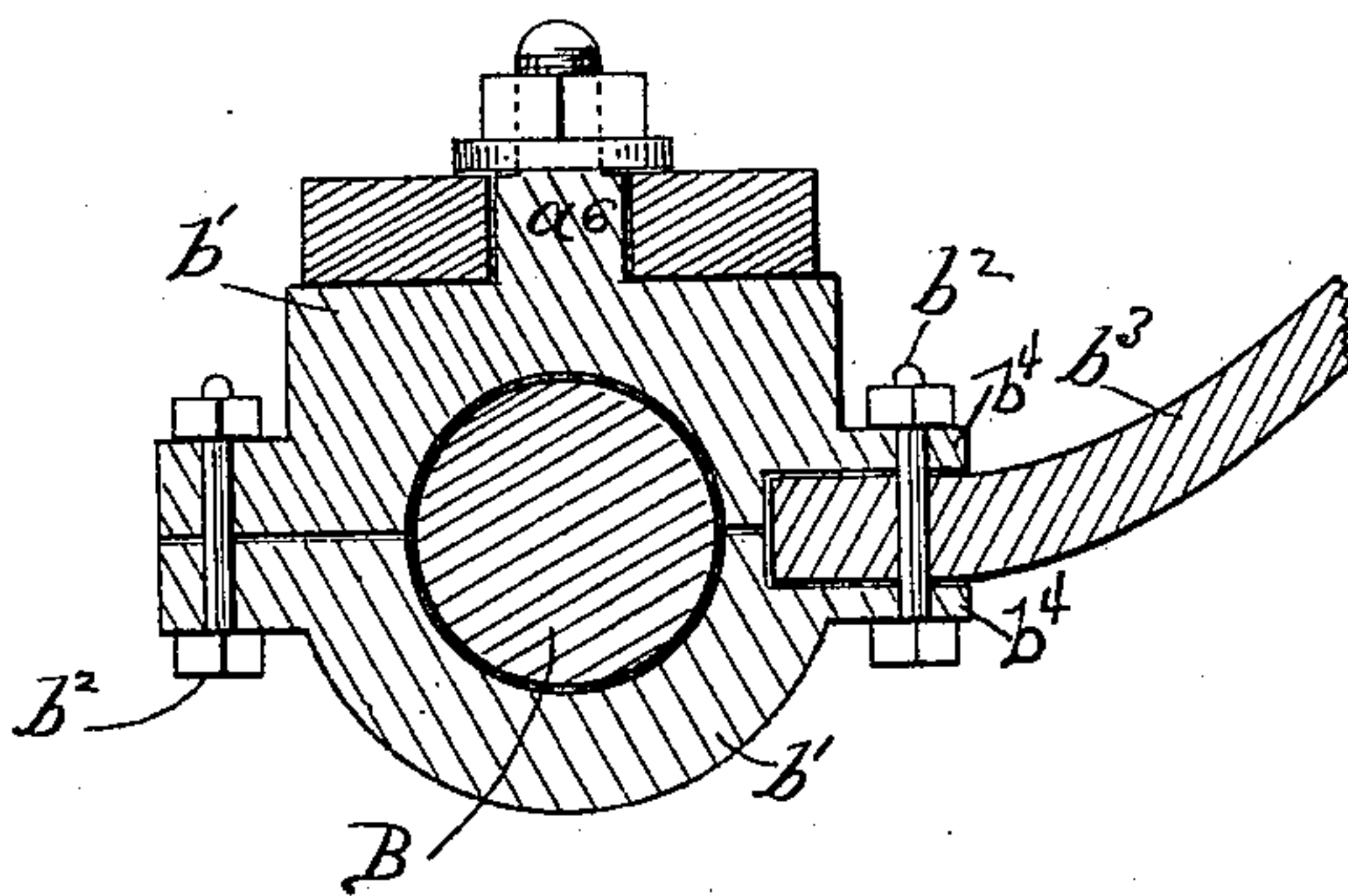


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN R. GIBBONS AND MARTIN L. FLOWERS, OF ROME, GEORGIA.

COMBINED PULVERIZER, HARROW, AND CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 330,639, dated November 17, 1885.

Application filed June 22, 1885. Serial No. 169,420. (No model.)

To all whom it may concern:

Be it known that we, JOHN R. GIBBONS and MARTIN L. FLOWERS, citizens of the United States, residing at Rome, in the county of Floyd and State of Georgia, have invented a new and useful Improvement in Agricultural Implements, of which the following is a specification.

Our invention relates to that class of implements wherein wheel or disk gangs are arranged in sets to draft connections, and comprises means and devices which can be used either as an earth-pulverizer, harrow, or cultivator.

In carrying out our invention we organize gangs of rotatable disks, journaled to the arms of an arch-bar in such a manner that they can be readily moved in groups to one or more divergent angles, and can also be arranged at required distances from each other.

Our invention consists in the novel and peculiar construction of the several members and elements of the machine and in combinations thereof, as hereinafter described, illustrated in the drawings, and specifically pointed out in the claims.

Referring to the accompanying drawings, in which like letters of reference point out similar parts on each figure, Figure 1 is a perspective view of our invention, showing two gangs of disks inclined from the middle forwardly in two opposite diverging lines. Fig. 2 is a similar view showing the disks inclined in opposite lines rearwardly. Fig. 3 is a detail view of the arch-bar illustrated in Figs. 1 and 2, showing the manner of bolting together its two halves, the dotted lines illustrating how it can be increased and decreased in width. Fig. 4 represents a form of strap or box that surrounds the axle, showing the lower end of leg of arch-bar of the form shown in Fig. 3, and manner of connecting the end of brace to a lower stud comprising a vertical axial point upon which the gang of disks turn. Fig. 5 is a side view of the casting in which work the operating-levers. Fig. 6 is a sectional view thereof on the line *y y*. Fig. 7 is a view of a form of arch-bar provided with separable sliding legs. Fig. 8 is an enlarged detail view of the form of arch-bar shown in Fig. 7, provided with detachable

foot-pieces having end balls, showing split axle-boxes with upper sockets and side lugs for reception of the ends of braces. Fig. 9 is a form of box shown in Fig. 4, illustrating means for connecting at the side thereof the lower end of the braces.

In the drawings, A is an arch-bar, as shown in Fig. 3, consisting of two opposite halves composed of side legs, *a a*, and upper bend or bridge pieces, *a' a'*, at about right angles to said legs, said bridge being provided with apertures *a²*, for reception of bolts *a³* for connecting the two parts, as plainly shown in Figs. 1, 2, and 3, the bolts *a³* being provided with fastening-nuts common to analogous devices. It will be understood that the width of the arch-bar can be increased or diminished at will. (See dotted lines, Fig. 3.) In this form each leg *a* at its lower end is curved or twisted, forming the hooked portion *a⁴*, said portion having eyes *a⁵* for reception of a pin or bolt, *a⁶*, for connecting said hooked portion to the box *b'*, thereby forming a journal-bearing for the box or strap *b'* surrounding the axle B.

Braces *b³* are pivotally fastened to a lower stud of the strap *b'*, (see Fig. 4,) or between side lugs, *b⁴*, (see Fig. 9,) and at the opposite end to a draft-bar, C, to the rear of which bar is a driver's seat, D. Said strap *b'* is preferably made in two parts, as shown in Figs. 1, 4, and 9, adapted to be bolted round the axle B by nutted bolts *b²*.

Figs. 7 and 8 illustrate an arch-bar that is extensible by sliding apart the legs 2 upon a bridge-piece, 1, which bridge-piece in cross-section may be round, as shown in Fig. 7, or quadrangular, as shown in Fig. 8, said legs 2 being firmly held in place by screw-threaded bolts 5 at the top or side, as plainly shown in said figures. The upper portions of the heads of the legs 2 are apertured at 3, (see detail, Fig. 7,) to enable them to pass backward and forward upon the bridge 1 of the arch-bar, the screw-threaded apertures 4 being for reception of threaded bolts 5, as will be readily understood. This last-described form of extensible arch-bar we prefer when we employ the ball-and-socket connection; but we do not desire to limit ourselves to special mechanism for connecting the feet of the ex-

tensible arch-bars to the axle-boxes and for pivotally fastening thereto the lower ends of the braces b^3 , as it is manifest that any of the forms shown and described that will enable the gangs of disks to turn on a horizontal plane will be within the purview of our invention.

The employment of the ball-and-socket connection is plainly illustrated in Fig. 8, and may be thus described: To the lower part of each leg 2 is secured a detachable foot, 7, having a terminal ball, 6. Said foot is socketed at its upper end for reception of the lower end of the leg 2, wherein it is rigidly held by means of a stud-headed bolt, 8.

B' is a split box adapted to surround the axle B, the two parts of said box being shown connected at the right of Fig. 8, and in section to the left thereof it has a lower extending lug, 10, apertured for admission of a bolt, 11, and is again apertured at 12 for a similar purpose. The box B' has an upper extension, b^5 , hollowed out to form a socket for reception of the ball 6 upon the foot 7, said extension being further provided with an oil-duct, b^6 , for lubricating the axle B.

b^7 b^7 are laterally-extending lugs between which, by means of a pivot-pin, b^2 , the ends of the braces b^3 are pivotally held in place in the same manner as illustrated in Fig. 9.

f f , Fig. 1, are foot-rests.

L L are hand-levers fastened at each side of the draft pole or shaft C within recesses p of castings or plates P, said castings having apertures p' in extensions p^2 , for reception of bolts P^3 , whereby to fasten said casting to the draft pole C. The lower ends of said levers are curved outwardly, as shown at l l , and to the lower ends of said curved portions are pivoted connecting-rods R, their opposite ends being connected at f^3 to sleeves f' , surrounding the disk-axes B, as shown in Figs. 1 and 2.

As will be readily understood, the gangs of disks may be turned round at different relative angles, or both may be turned in the same oblique line by said levers and connecting-rods at the will of the rider. The castings P are provided with upwardly-projecting gear-toothed sectors P' , having teeth or detents p^3 to engage spring-pawls l' , whereby the levers are retained at different inclinations, thereby holding the gangs of disks in either straight or oblique alignment or at different relative diverging angles. The pawl is provided with the ordinary spring-releasing device.

E is the ordinary double-tree, to which whiffletrees are attached as usual upon such devices. The disks F are journaled upon an axle, B, sleeves f' keeping them a desired distance apart, and they are finally kept upon said axle by end nuts, f^2 . It will be obvious

that said disks revolve when the machine is in motion. The disks F are concave on one surface and convex upon the other, as shown.

The operation of our invention can be readily understood from the drawings and the foregoing description by those skilled in the art to which it is allied, but its functions and advantages may be briefly stated as follows: When the gangs of disks are in the position shown in Fig. 1, the earth will be thrown from the center of the machine, or away from the plant cultivated, while when they are in position shown in Fig. 2, the earth will be thrown to the center of the machine, or toward the plant cultivated, the change of direction of the gangs being made without removing the boxes from the shaft B. By decreasing the distance of the legs of the arch-bar the disks are brought close together. The device is adapted for employment as a pulverizer and for making corn, cotton, and potato ridges. By spreading out the arch its full width the gangs will be separated and the plant-rows be straddled.

It will be readily understood that by simply operating one or both of the levers the direction of one or the other or both gangs of disks will be instantly changed, thus preventing the cutting of plants within the tracks of said disks.

What we claim is—

1. In an earth-pulverizer and cultivator, the combination of a laterally-extensible arch-bar having downwardly-extending legs and gangs of rotatable disks connected thereto by universal joints with the shaft upon which said disks are journaled, said shaft being connected by rods to operative levers, substantially as described.

2. In a harrow, earth-pulverizer, and cultivator, an arch-bar having a bridge-piece, 1, provided with laterally-sliding legs 2, said legs provided with detachable feet 7, having terminal balls 6, in combination with split boxes B' , having upward-socketed extension b^5 , and the disk-gang shafts, as and for the purpose described.

3. In a harrow, earth-pulverizer, and cultivator, the operating-levers L L , in combination with gangs of rotatable disks mounted upon an axle, B, said axle being connected by a ball-and-socket joint to the feet of downwardly-extending legs of a laterally-extensible arch-bar, as and for the purpose intended, substantially as described.

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Witnesses:

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MAX MEYERHARDT.