

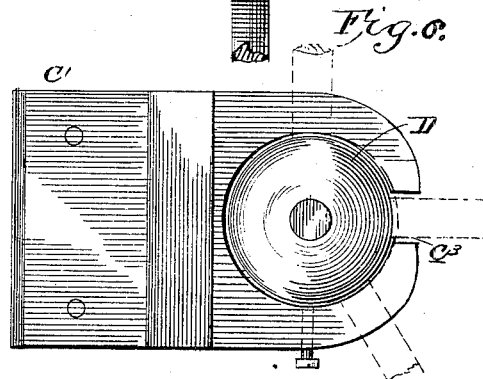
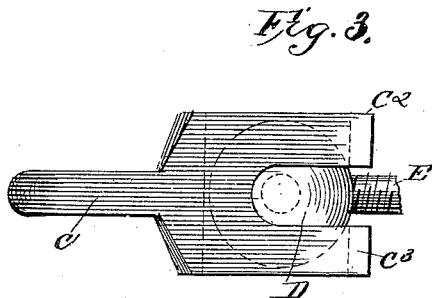
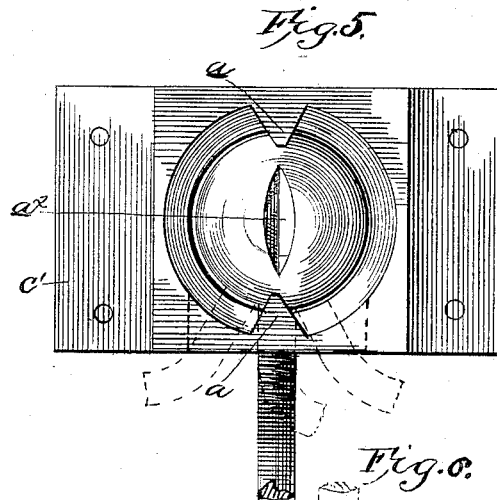
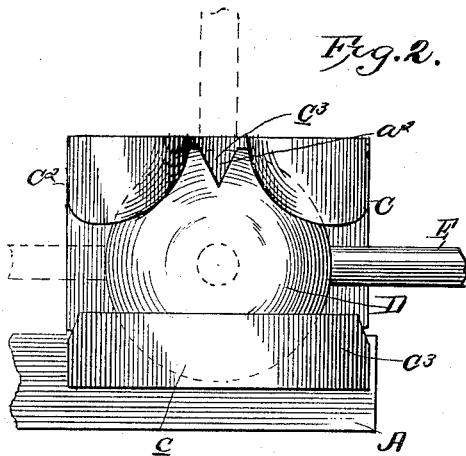
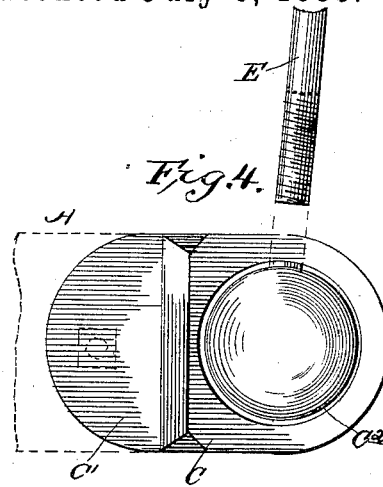
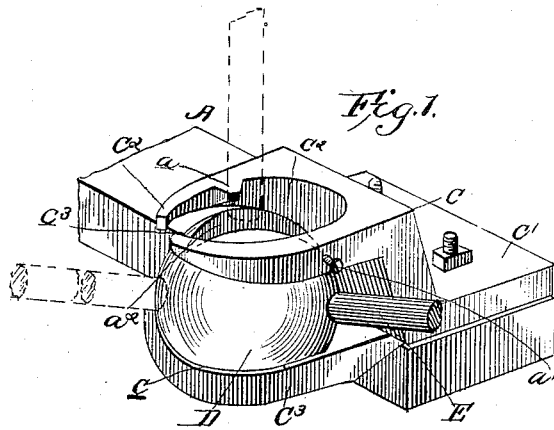
(No Model.)

J. P. & C. L. MILLER.

BALL JOINT COUPLER.

No. 344,918.

Patented July 6, 1886.



Witnesses;  
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By R. B. & A. H. Lacey Attys

# UNITED STATES PATENT OFFICE.

JAMES PARKS MILLER, OF KENNEY, AND CHARLES LINCOLN MILLER, OF  
RIDGEVILLE, ILLINOIS.

## BALL-JOINT COUPLER.

SPECIFICATION forming part of Letters Patent No. 344,918, dated July 6, 1886.

Application filed April 21, 1886. Serial No. 199,660. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES PARKS MILLER and CHARLES LINCOLN MILLER, citizens of the United States, residing at Kenney and Ridgeville, in the counties of De Witt and Iroquois, respectively, and State of Illinois, have invented certain new and useful Improvements in Ball-Joint Couplers; 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.

Our invention relates to coupling devices particularly adapted for connecting a land-marker to seed-planters, whereby the marker is free to adapt itself to the unevenness of the ground and readily pass over the obstructions in its path without having a useless side play, said marker being adjusted or swung around from side to side according to the direction in which the planter is moving, and being quickly coupled or uncoupled from the planter without the engagement or disengagement of bolts, pins, &c., usually made use of for coupling such parts together.

It consists in the novel features of construction and combinations of parts more fully hereinafter set forth and claimed, and shown in the annexed drawings, in which—

Figure 1 is a perspective view of our improved coupler, shown applied to the end of a beam or planter-sill. Fig. 2 is a front view of the coupling device, showing the manner of coupling the parts. Fig. 3 is a side view of a modified form. Fig. 4 is a plan view of the same, showing the coupler-bar detached by full lines and attached by dotted lines. Figs. 5 and 6 are plan views of modifications.

Our improved coupler consists of the casting C, ball D, and coupler-rod E.

The casting is composed of a shank, C', terminating in a bifurcated end forming extensions C<sup>2</sup> C<sup>3</sup>. The shank is designed to form a means of attachment, and is provided with suitable openings for the purpose.

The shank and extensions may be made of a single casting, as shown most clearly in Fig. 3, but for convenience of construction it is preferred to make the casting in two parts or halves, as shown more clearly in Figs. 1 and 2,

the rear ends of each half or part forming the shank being provided with interlocking or overlapping flanges to remove strain from the bolts and prevent lateral displacement of the one relative to the other.

The extension C<sup>2</sup> is provided with a cup-shaped socket, c, for the reception of the ball D, a segment of which fits snugly therein, forming a universal-joint connection. The extension C<sup>3</sup> is provided with a circular opening, c', directly in line with the socket, and of a diameter equal to or slightly longer than the diameter of the ball, so that the latter may be easily passed through the opening c' and dropped into the socket, or be removed therefrom.

The coupler-rod may form an integral part of the ball, or it may be separate from and attached thereto.

In the first instance, to facilitate the coupling and uncoupling it has been found expedient to remove a portion from the upper extension, leaving an opening or passage-way, c'', which extends from the outer edge into the circular opening, so that in the coupling or uncoupling operation the coupler-rod may pass through said opening.

In practice, to couple the parts when the ball is on the end of the coupler-rod the latter is brought to a vertical line and the ball dropped through the opening c' in the upper extension into the socket in the lower extension. The rod is then turned down through the opening in the side of the upper extension into the space between the two extensions, when the coupling is effected as shown in Figs. 1, 2, and 6. The reverse of this operation uncouples the parts, as is manifest.

In case the coupler-rod and ball are detachable, as shown in Figs. 3, 4, and 5, the upper section has no side opening cut therein, the parts being coupled and uncoupled by detaching the coupler-rod from the ball, which latter may be removed from or dropped into the socket through the circular opening in the extension C<sup>2</sup> and the rod secured to the ball. This latter construction is of great importance and advantage in cases where the coupler-rod could not conveniently be brought into a vertical position.

In practice, the casting C being secured to the sill or bar A, and the coupler-rod secured to the land-marker or suitable device to be

coupled to the bar or sill, the latter may be coupled with and detached from the other in the manner already set forth for the coupling and uncoupling of the rod and casting. The space between the extensions is of a width greater than the thickness of the coupler-bar, so that the latter may have a vertical play, which is necessary when employed to couple a land-marker to a planter, as it permits the land-marker to accommodate itself to the unevenness of the ground. It extends from side to side of the extensions, so that the land-marker may be swung around from one side of the planter to the other, the same being true of our coupler when used for other purposes.

The hereinbefore described coupler is equally well-adapted for other machinery and for hitching or coupling parts requiring a universal joint, as for coupling land-markers to seed-planters; but it is well adapted for this purpose, as the vertical movement of the land-marker coupler-bar is limited by contacting with the edges of the sections adjacent the space in which the rod is free to move. Thus when attached to a land-marker the vertical movement thereof is limited, thus preventing it dropping into deep ruts or gullies and becoming broken off by the continued advance of the planter.

To prevent the vertical movement of the ball in its socket when in position lugs  $a$  project into the opening  $c^2$  from the extension  $C^2$ , or a set-screw,  $a'$ , screwed into the edge, may be turned to extend into the opening, and again the ball may be slightly elongated or of a greater diameter in one direction, preferably in line with the coupler-rod, so that the elongation will extend beyond the edge of the opening in the section  $C^2$ , as indicated by dotted lines in Fig. 6. There may be one or more lugs  $a$ , and to permit the insertion and withdrawal of the ball the latter is provided with grooves  $a^2$  in its sides corresponding with the position and shape of the lugs. When the lugs and grooves are in register, the ball may be removed from or dropped into the socket, and when turned the ball cannot be accidentally displaced.

The use of the set-screw obviates the necessity of grooving the ball; but the coupling and uncoupling is not so readily effected.

The coupling-rod may be straight or have a curved end, as indicated.

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

1. The herein-described coupler, consisting of a casting having a shank terminating in a bifurcated end forming extensions, the one provided with a cup-shaped socket, the other with an opening in line with the socket, a ball in said socket, and a coupler-arm projecting from the ball and working in the space between the extensions, substantially as and for the purposes set forth.

2. The herein-described coupler, consisting of a casting having a shank terminating in a bifurcated end forming extensions, the one having a cup-shaped socket, the other an opening in line with the socket and a side passage-way, and a ball having a coupler-arm projecting therefrom to be inserted through said passage-way in the operation of coupling and uncoupling, substantially as specified.

3. The combination, with the casting having a bifurcated end forming extensions, the one having a cup-shaped socket, the other an opening in line with the socket, of a ball of less diameter than the opening seated in the socket, and a coupler-arm removably connected therewith, substantially as and for the purposes set forth.

4. The combination, with the casting having a bifurcated end forming parallel extensions, the one having a socket, the other an opening in line with the socket, of a ball of less diameter than the opening seated in the socket, and a coupler of less thickness than the distance between the extensions projecting from the ball, and having a limited vertical play and free to be swung around from side to side, substantially as shown, and for the purposes described.

5. The combination of the two-part casting having rear extensions bolted together, forming a shank, and front extensions located at a distance apart, leaving a space between them, the one provided with a cup-shaped socket, the other having an opening in line with the socket, a ball seated in said socket and of a less diameter than the opening, and a coupler-bar projecting from the ball and working in the space between the front ends, substantially as and for the purposes set forth.

6. The combination, with the casting having extensions leaving a space between them, the one provided with a socket, the other with an opening in line with the socket, of a ball having a coupler-bar projecting therefrom seated in said socket, and a projection extending beyond the opening in the apertured extension to prevent the accidental displacement of the ball from its seat when in position, substantially as set forth.

7. The combination, with the casting having extensions leaving a space between them, the one having a seat formed therein, the other an opening therein in line with the seat, and a lug projecting from the casting into the opening, of a ball provided with a groove to correspond with the projection and a coupler-bar, substantially as and for the purposes set forth.

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

JAMES PARKS MILLER.  
CHARLES LINCOLN MILLER.

Witnesses:

HENRY J. FREEMAN,  
LEE C. BROWN.