

Nov. 29, 1960

H. V. HANSEN

2,962,103

MARKER

Filed Feb. 28, 1958

FIG. 1

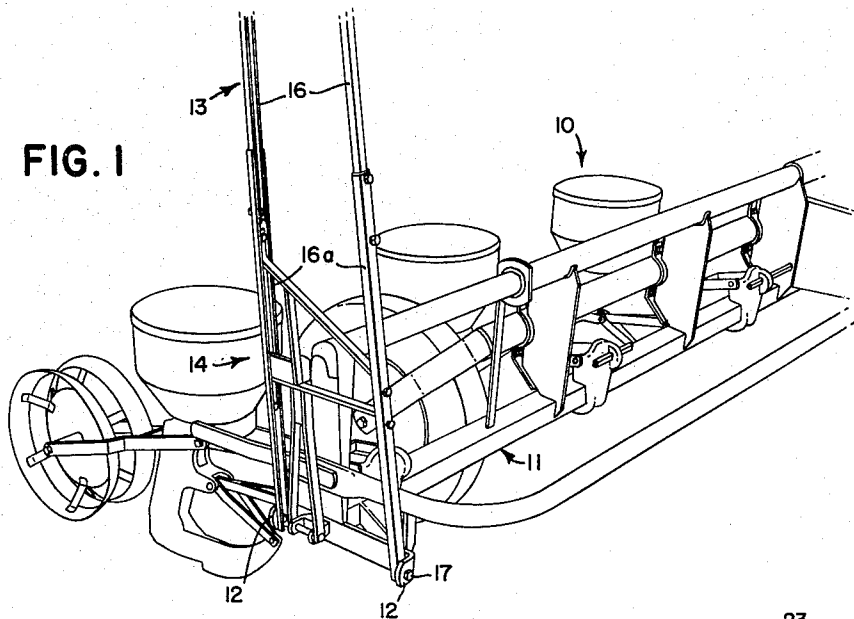


FIG. 2

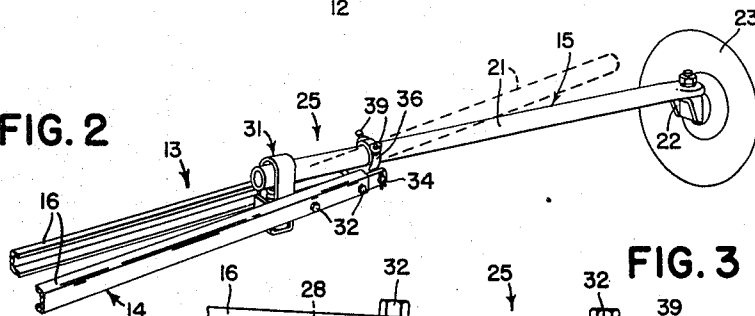


FIG. 3

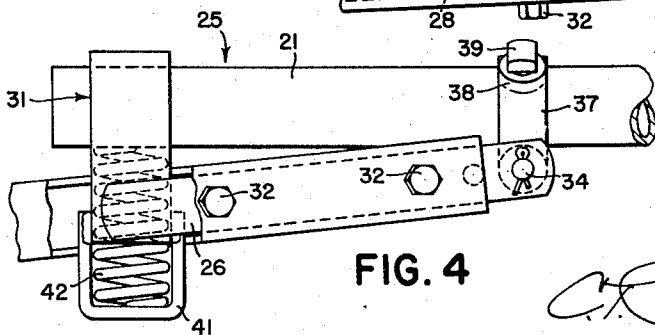
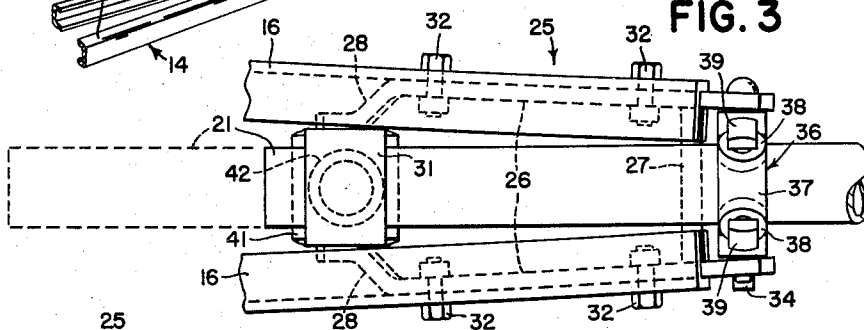


FIG. 4

INVENTOR.
HAROLD V. HANSEN

BY

C. Parker & R. Johnson
ATTORNEYS

1

2,962,103

MARKER

Harold V. Hansen, Hillsdale, Ill., assignor, by mesne assignments, to Deere & Company, a corporation of Delaware

Filed Feb. 28, 1958, Ser. No. 718,271

11 Claims. (Cl. 172-126)

The present invention relates generally to agricultural implements and more particularly to marker means for multi-row planters and similar implements.

The object and general nature of the present invention is a provision of a new and improved shock absorber type marker for planters and the like, especially for relatively large size planters, such as those adapted to plant six and more rows at one time. In the case of six row planters, for example, the marker arms are quite long, usually in the nature of from 10 to 12 feet, depending on the row spacing, and in the use of such marker arms, when the planter is lowered slowly, the marker arm to be placed in operation will also lower slowly. However, when the planter is lowered rapidly, the marker arm will also lower rapidly and in most cases, will, for all practical purposes, fall free. When operating under conditions in which the soil is fairly hard, when the marker arms falls free the impact between the mark-forming means and the ground is substantial, and in some cases has actually caused bending of the marker arm structure. Specifically, therefore, it is the purpose of the present invention to provide an articulated marker arm arrangement with associated shock absorber means so that the above mentioned impact stresses are substantially eliminated or absorbed by the shock resisting means.

More particularly, it is a feature of this invention to provide a shock absorber marker arm construction in which an outer marker arm section is pivoted to an inner marker arm section for movement relative thereto about a generally horizontal transverse axis, with spring means arranged to absorb the impact loads when the marker arm is dropped to the ground. Further, it is a feature of this invention to provide new and improved marker arm adjusting and mounting means.

These and other objects and advantages of the present invention will be apparent to those skilled in the art after reconsideration of the following detailed description, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a fragmentary perspective view showing one end of a six row planter and a portion of the associated marker arm means in which the principles of the present invention have been incorporated.

Fig. 2 is an enlarged perspective view of the outer portion of the marker arm means shown in Fig. 1.

Fig. 3 is a plan view of the shock absorbing mechanism incorporated in the marker arm means of Figs. 1 and 2.

Fig. 4 is a side view of the construction shown in Fig. 2, certain parts being broken away so the arrangement of parts can be seen more clearly.

Referring first to Fig. 1, the marker arm construction of this invention is shown as pivotally connected for vertical swinging to one end of the planter 10. The planter frame 11 includes a pair of marker pivot brackets 12 and an associated marker 13 at each end of the frame 11. As will be understood by those skilled in the art, the usual planter construction includes a marker arm and associated parts at each side of the planter but for

2

convenience of illustration only the right hand marker 13 is shown in detail. Each marker arm 13 of the present invention is of an articulated or two-part construction, and each includes a main or inner marker arm section 14 (Fig. 1) and an outer or pivoted marker arm section 15 (Fig. 2). The main arm section 14 is made up of two pairs of channels 16 and 16a connected together by suitable reinforcing means and pivotally connected at their inner ends, as at 17, with the marker supporting brackets 12 on the planter frame. Suitable means (not shown) is provided for raising and lowering the marker arms, such means conventionally including mechanism actuated at the same time as the planter furrow openers are raised and lowered, the marker arms being lowered alternately into operating position. Usually the down marker is raised whenever the planter furrow openers are raised, as at one end of the field, the operator then turns around and when it is desired to start planting again the planter furrow openers are lowered. At the same time the marker arm at the other side of the machine is automatically lowered. As mentioned above, the marker arm that it is desired to place in operation may be lowered slowly if the planter furrow openers are lowered slowly. However, more frequently, when the operator lowers the planter into planting position he does so rather rapidly, and consequently the marker arm to be placed in operation is also lowered rapidly, involving excessive impact stresses if the ground is fairly hard. Absorbing means to minimize the effects of the shock loads will be described below.

The main marker arm section channels 16 are arranged in outwardly converging relation, as will be seen from Fig. 1. The outer marker arm section 15 comprises a pipe member 21 flattened at its outer end to receive a marker disk mounting structure 22 which carries a mark forming disk 23 rotatably carried by the supporting or mounting structure 22. The outer marker arm section 15 is pivotally connected with the outer end of the main marker arm section 13 by pivot means that accommodates relative movement between the marker arm sections about a generally transverse axis. Such pivot means is also constructed and arranged so as to include shock absorbing means that takes at least a major portion of the impact stresses involved when the marker is dropped to the ground. Such means which form the principal portion of the present invention, will now be described.

The shock absorber assembly, indicated in its entirety by the reference numeral 25, comprise a pair of side bars 26 suitably interconnected by means of a tie pin 27, the ends of which are welded to the side bars 26 in such a way that the bars converge outwardly and substantially at the same angle at which the channels 16 converge outwardly. The laterally inner ends of the side bars are bent to extend toward one another, as indicated at 28, and these ends are secured, as by welding, to a shock absorber yoke 31. This part is of inverted generally U-shaped configuration and is received at the innermost end of the marker arm pipe 21, as will be seen from Fig. 2. The side bars 26 are apertured to receive bolts 32 by which the side bars are fixed in position, the bars being received in between the flanges of the channels 16 in nesting relation. The outer ends of the bars extend laterally outwardly beyond the ends of the channel 16. These outwardly extending ends are apertured to receive a pin 34 that pivotally connects a marker adjustment clamp 36 to the side bars 26. The member 36 includes a generally cylindrical portion 37 that slidably receives the inner end portion of the outer marker arm pipe section 21, and the cylindrical portion is provided with a pair of tapped bosses 38 that receive set

screws 39, by which the pipe member 21 is held in any position of adjustment in the clamp part 36.

The shock absorbing yoke 31 receives a U-shaped lower yoke section 41 that serves as an inner abutment or stop for a cushioning spring 42, the lower end of which is carried by the lower yoke section 41 and the upper end of which bears directly against the lower face of the inner end of the pipe 21. The spring is fairly strong and is of the type that is adapted to withstand shock loads. It will be observed that the lower U-shaped yoke 41 is welded to the lower portion of the main shock absorber yoke 31 so that the spring 42 is held in proper position therein but can be removed for replacement, if necessary, merely by loosening the set screws 39 and sliding the pipe 21 outwardly until the inner end of the pipe is clear of the shock absorber yoke unit.

As will be clear from Fig. 2, the spring 42 holds the inner end of the pipe 21 up against the upper rounded portion of the yoke 31 under a normal load, but if the marker should be dropped onto ground that is fairly hard, the spring 42 yields so as to absorb the impact stresses involved, the spring 42 permitting the marker arm sections to pivot, one relative to the other, in a generally downward direction, somewhat as indicated in dotted lines in Fig. 2. Also, loosening the set screws 39 and sliding the pipe member 21 inwardly or outwardly through the clamp collar 36 provides for adjusting the marker arm for different row spacings, as indicated in dotted lines in Fig. 3.

While I have shown and described above the preferred structure in which the principles of the present invention have been incorporated, it is to be understood that my invention is not to be limited to the particular details, shown and described above, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

What I claim, therefore, and desire to secure by Letters Patent is:

1. In a marker arm construction for a planter having a frame, the combination of a main marker arm section connected with said frame for generally vertical swinging between raised and lowered positions, an outer marker arm section carrying mark forming means at its outer end and pivotally connected at its inner end with the outer end of said main marker arm section for movement relative thereto about a transverse axis, a shock absorber yoke carried by one of said marker arm sections and encircling the other at a point spaced from the pivot connection between said sections, and an impact-absorbing spring yieldably holding said other arm section in position in said yoke and yieldably opposing relative movement between said arm sections.

2. In a marker arm construction, a main section, an outer section pivotally connected with the outer end of said main section for upward movement relative thereto when the marker arm is dropped and the outer portion of said outer section strikes the ground, an inverted U-shaped yoke fixed to said main section inwardly of the point of pivotal connection between said sections and receiving the inner end of said outer section, and spring means yieldably holding the inner end of said outer section in the upper portion of said yoke.

3. The invention set forth in claim 2 further characterized by a lower yoke section fixed to the lower part of said U-shaped yoke and receiving the lower portion of said spring means, the upper portion of said spring means bearing against the lower part of the inner end portion of said outer arm section.

4. In a marker arm construction, a main marker arm section comprising a pair of side members mounted for generally vertical swinging and spaced apart in a generally fore-and-aft direction, an outer marker arm section provided at its outer end with ground engaging mark

forming means, a pair of side bars fixed to the outer end portions of said side members, pivot means connecting the outer ends of said side bars with the inner end portion of said outer arm section, and shock absorbing cushion means connecting the inner end of said outer arm section with the inner end portions of said side bars.

5. In a marker arm construction, a main marker arm section comprising a pair of side members mounted for generally vertical swinging and spaced apart in a generally fore-and-aft direction, an outer marker arm section provided at its outer end with ground engaging mark forming means, a pair of side bars fixed to the outer end portions of said side members, pivot means connecting the outer ends of said side bars with the inner end portion of said outer arm section, a part connecting the inner portions of said side bars and serving as a stop to limit downward movement of the outer end of said outer marker arm section, and shock absorbing cushion means yieldably holding the inner end of said marker arm section against said stop part.

6. In a marker arm construction, a main marker arm section comprising a pair of side members mounted for generally vertical swinging and spaced apart in a generally fore and aft direction, an outer marker arm section provided at its outer end with ground engaging mark forming means, a pair of side bars fixed to the outer end portions of said side members, a marker adjustment clamp pivotally mounted on the outer ends of said side bars, said outer marker arm section being axially shiftable in said pivot clamp, and shock absorbing cushion means connecting the inner end of said outer arm section with said main marker arm section.

7. The invention set forth in claim 6 further characterized by shock absorbing cushion means connecting the inner end of said outer arm section with the inner end portions of said side bars.

8. In a marker arm construction, a main marker arm section comprising a pair of side members mounted for generally vertical swinging and spaced apart in a generally fore-and-aft direction, an outer marker arm section provided at its outer end with ground engaging mark forming means, a marker adjustment clamp pivotally mounted on the outer end portions of said side members, said outer marker arm section being axially shiftable in said pivot clamp, and shock absorbing cushion means slidably receiving the inner end of said outer marker arm section and yieldably connecting the inner end of said outer arm section with said main marker arm section.

9. In a marker arm construction, a main marker arm section comprising a pair of side members mounted for generally vertical swinging and spaced apart in a generally fore-and-aft direction, said side members extending outwardly in converging relation, an outer marker arm section provided at its outer end with ground engaging mark forming means, a pair of side bars arranged in spaced apart relation and angled to correspond to the convergence of said side members, means fixing said side bars in a position between said converging members with the outer ends of said side bars extending outwardly beyond said side members, and pivot means connecting the outer ends of said side bars with the inner end portion of said outer arm section.

10. The invention set forth in claim 9, further characterized by said pivot means including a marker adjustment clamp pivotally mounted on the outer ends of said side bars, said outer marker arm section being axially shiftable in said marker adjustment clamp.

11. In a marker arm construction, a main marker arm section comprising a pair of outwardly convergent side members mounted for generally vertical swinging and spaced apart in a generally fore-and-aft direction, said side members comprising channels arranged with their

5

flanges extending inwardly toward one another, an outer marker arm section provided at its outer end with ground engaging mark forming means, a pair of side bars arranged in spaced apart relation and angled to correspond to the convergence of said side members, said side bars being dimensioned to fit, respectively, in between the flanges of said side members, means fixing said side bars to said channel members with the outer end of said side bars extending outwardly beyond said side members, and pivot means connecting the outer ends of said side bars with the inner end portion of said outer arm section.

5

10

420,280
505,266
883,244
1,589,101
2,175,282
2,636,459

9,610

6

References Cited in the file of this patent

UNITED STATES PATENTS

Morse	Jan. 28, 1890
Council	Sept. 19, 1893
Shrader	Mar. 31, 1908
Bramlett et al.	June 15, 1926
Cormany	Oct. 10, 1939
Graves	Apr. 28, 1953

FOREIGN PATENTS

Australia	Sept. 29, 1927
-----------	----------------