Oct. 21, 1958 A. PEREIRA ET AL 2,856,833

MARKER MECHANISM

Filed April 12, 1956 4 Sheets-Sheet 1

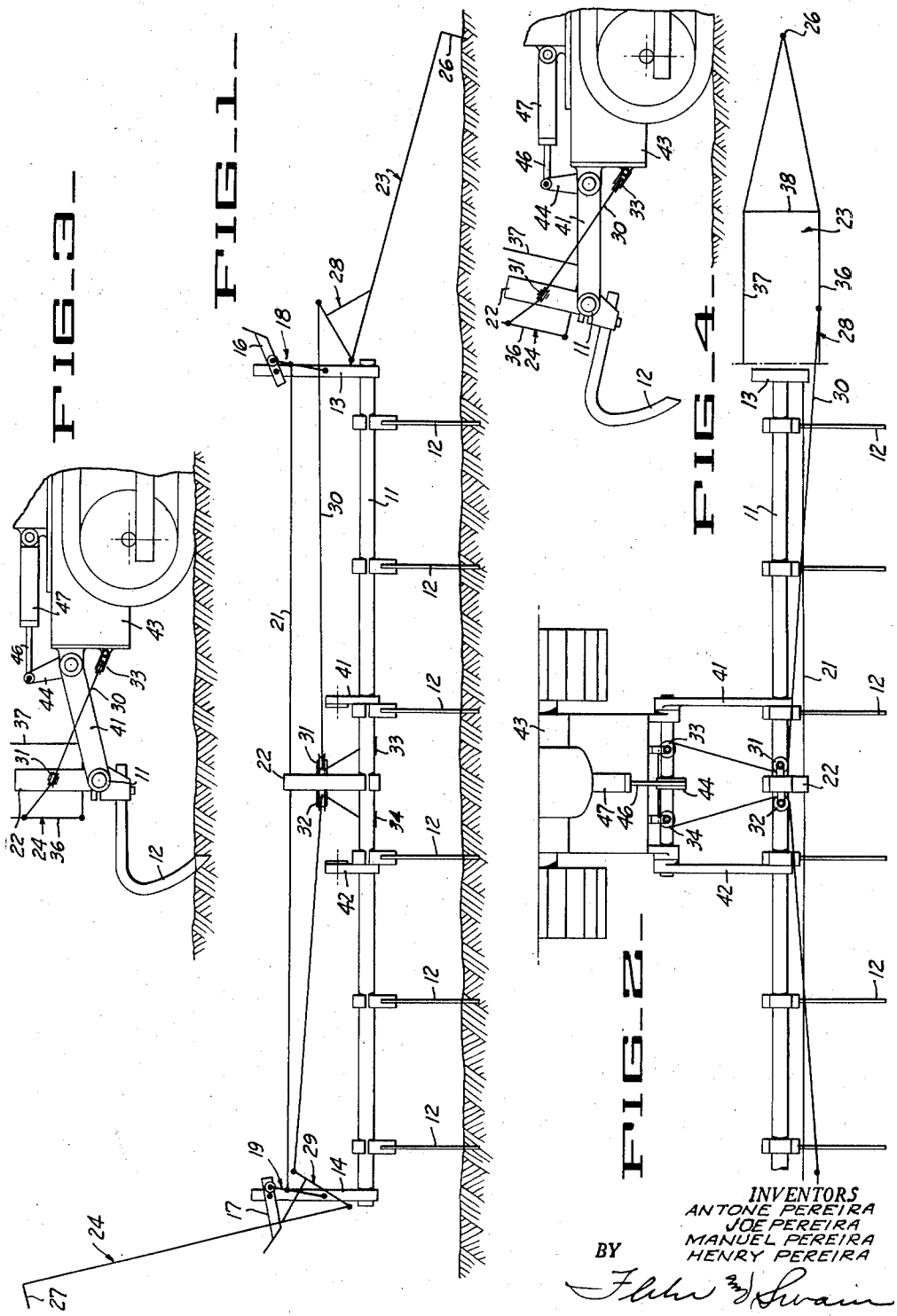


FIG. 1

FIG. 3

FIG. 4

FIG. 2

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MARKER MECHANISM

Filed April 12, 1956 4 Sheets-Sheet 2

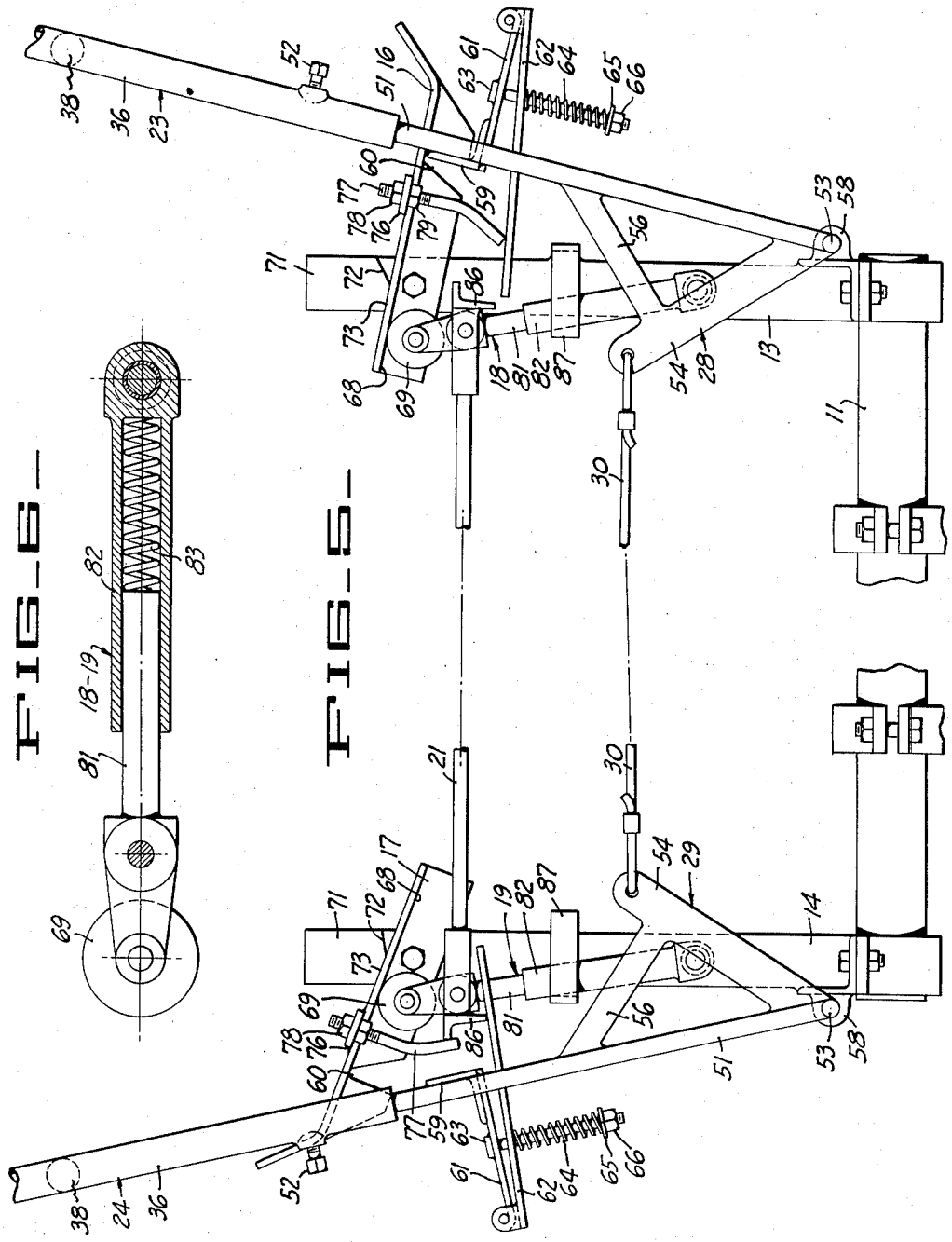


FIG. 5

FIG. 6

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MARKER MECHANISM

Filed April 12, 1956 4 Sheets-Sheet 3

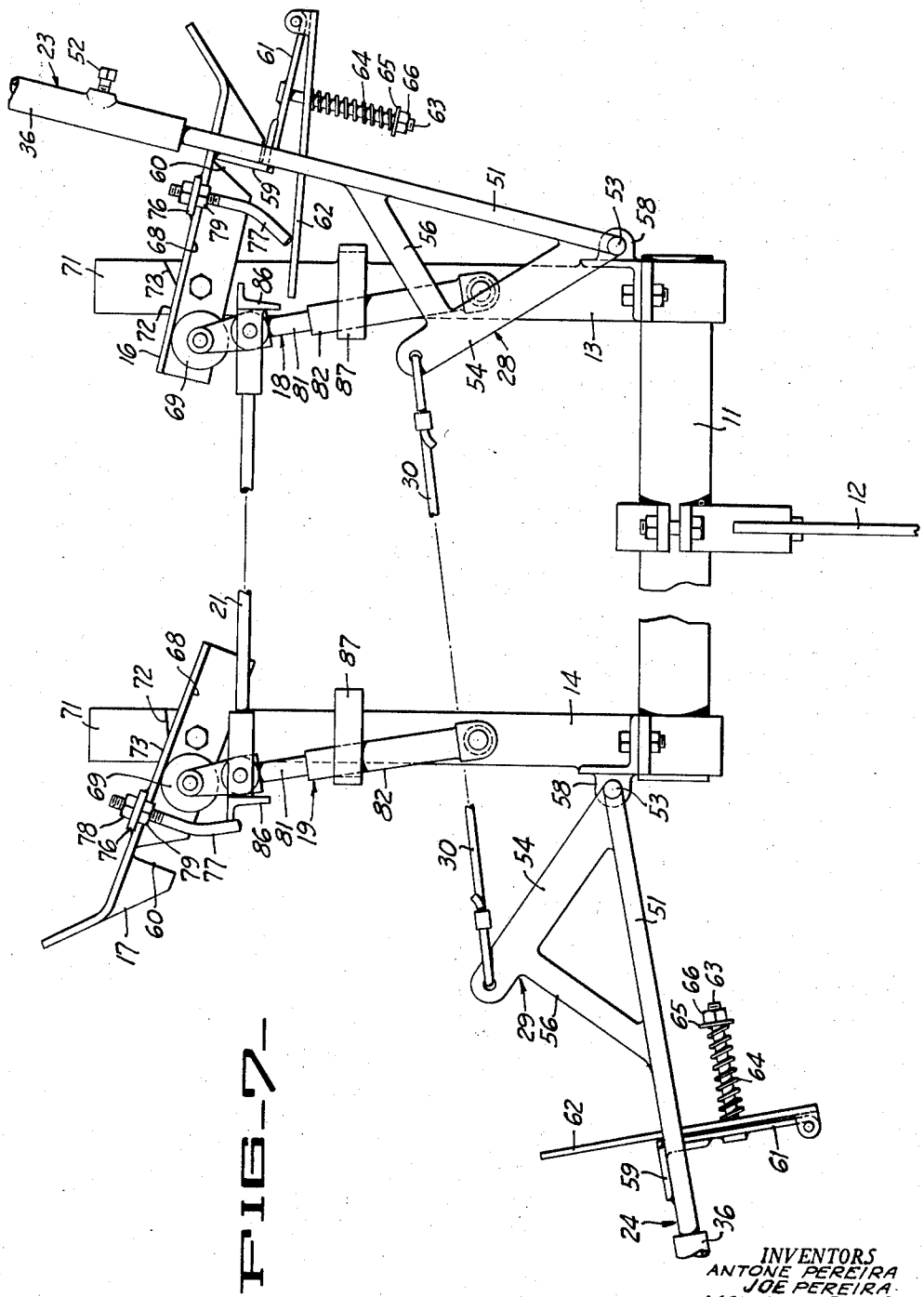


FIG_7_

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FIG-9-

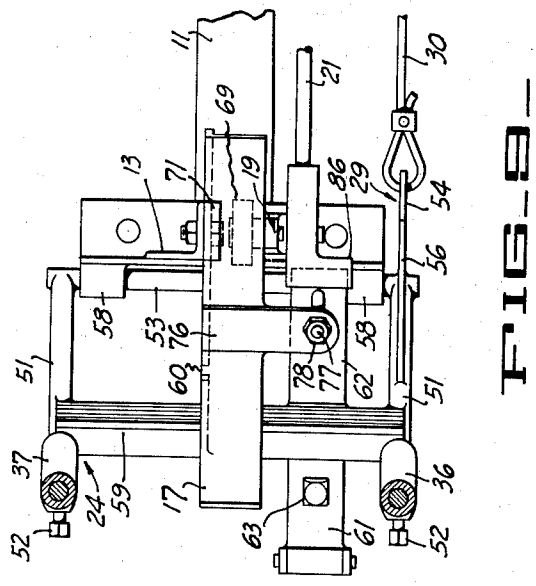
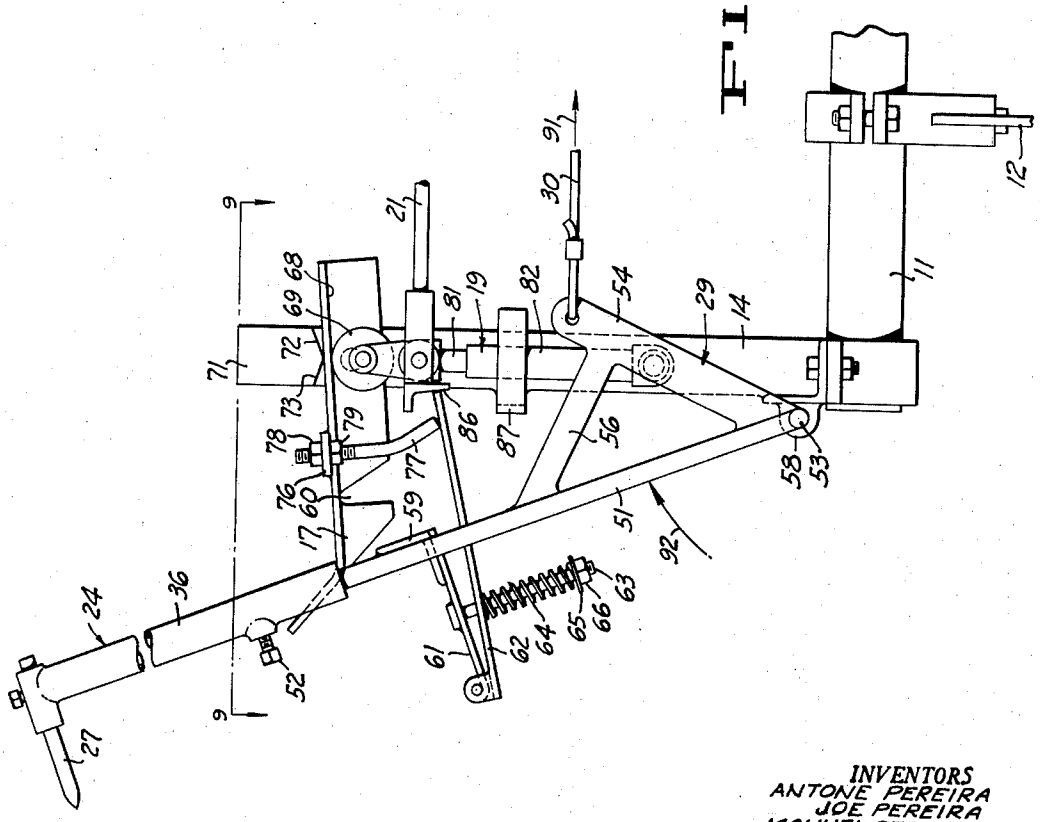


FIG-8-



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MARKER MECHANISM

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Application April 12, 1956, Serial No. 577,781

2 Claims. (Cl. 97—230)

This invention relates generally to agricultural implements and more particularly to a marker mechanism for use therewith.

It is a general object of the present invention to provide a novel marker mechanism in which the operation of the markers is automatically controlled.

It is another object of the present invention to provide a marker mechanism for use with farm tools and implements of the type which are raised into an inoperative position and lowered into an operative position.

It is still a further object of the present invention to provide a marker mechanism which automatically controls a pair of marker arms whereby both of the markers are in a raised position when the tool is lifted to an inoperative position and an alternate one of the markers is lowered when the tool is lowered into its operative position. Thus, the farmer need not concern himself with raising and tripping the markers when he turns at the end of a traverse of a field.

It is still a further object of the present invention to provide a marker mechanism which automatically controls a pair of markers whereby the down marker is raised and latched and the opposite marker is unlatched when the implement is lifted into the inoperative position, both markers are maintained in the raised position with the tool in the inoperative position, and the opposite marker is lowered when the implement is lowered into the operative position.

It is another object of the present invention to provide a marker mechanism in which the operation of markers is automatically controlled, which may be attached to farm implements without necessitating alterations thereof, which is relatively inexpensive to manufacture, and which is reliable in operation.

These and other objects of the invention will become more clearly apparent from the following description read in conjunction with the accompanying drawings.

Referring to the drawings:

Figure 1 is a rear elevational view of an implement with a pair of markers schematically illustrated;

Figure 2 is a plan view of the implement with one of the markers schematically illustrated;

Figure 3 is a side elevational view showing the implement lowered into operative position with the marker mechanism schematically illustrated;

Figure 4 is a side elevational view showing the implement raised to the inoperative view with the marker mechanism schematically illustrated;

Figure 5 is a rear elevational view of the marker mechanism in the position obtained when the implement is lifted with one of the marker arms latched in the raised position and the other arm unlatched and in readiness to be lowered when the implement is lowered;

Figure 6 is an enlarged view of the latch roller essembly;

Figure 7 is a view similar to Figure 5 but showing the relative position of the various component parts of the marker mechanism when the implement is lowered;

Figure 8 shows the marker arm being elevated as the implement is raised into the inoperative position and shows the latch just prior to latching of the associated arm;

Figure 9 is a view taken along the line 9—9 of Figure 8.

The marker mechanism of our invention may be used with any farm implement or tool of the type which is lifted or raised into an inoperative position and lowered into an operative position. The mechanism comprises a pair of spaced marker arms. A flexible line is secured to the markers and serves to raise the markers as the tool is lifted and to lower the appropriate one of the markers when the tool is lowered. The line passes over a pair of pulleys disposed between the markers and which are adapted to move with the tool and over one or more stationary pulleys. As the implement is raised, the amount of line required between the stationary and movable pulleys is increased thereby raising the marker which is in marking position.

The markers are adapted to engage a latching mechanism. The latching mechanism is provided with a release assembly which serves to release the markers alternately whereby when the tool is lowered, an alternate one of the markers is lowered. Thus, as the farmer traverses the field and reaches the end of the traverse, he lifts the tool to turn the marker, whereby the marker which is down is raised and serves to release the latch associated with the opposite marker, and itself becomes latched. Both markers remain in the raised position when the tool is in the inoperative or lifted position. After the farmer has turned and lowers the tool, the opposite marker is lowered to engage the soil.

Referring to Figure 1, we have shown an agricultural implement or tool which comprises a bar 11 to which are attached a plurality of ground engaging tines 12. Posts 13 and 14 are mounted on opposite ends of the tool. For example, they may be suitably attached to the ends of the traverse bar 11 or another member which forms a part of the implement. The posts 13 and 14 serve to mount the latches 16 and 17 respectively. Latch release roller assemblies 18 and 19 are pivotally mounted on the posts 13 and 14 and engage the latches in a manner to be presently described. The latch release roller assemblies are interconnected by means of a rigid connecting link 21 which extends across the tool and has its ends pivotally connected to the roller assemblies. The rigid member 21 may be slidably received in a supporting post 22 which is suitably attached to the implement, as, for example, to the bar 11. The rigid link 21 serves to urge the rollers transversely of the implement whereby the rollers serve to release one or the other of the latches. A pair of marker arms 23 and 24 are pivotally mounted at the ends of the implement. The marker arms may be lowered as shown on the right-hand side of the figure whereby the markers 26 and 27 engage the ground and form a marking furrow. The marker arms may swing upwardly to be latched by the associated latch 16 or 17.

Suitable levers 28 and 29 are connected to the arms 23 and 24 respectively. A continuous flexible line 30, for example, a cable, has its ends attached to the arms 28 and 29 and extends toward the center of the implement where it engages the pulleys 31 and 32. The cable then engages one or more stationary pulleys, as, for example, the pair of spaced pulleys 33 and 34. As illustrated, the pulleys 33 and 34 are mounted on the tractor. It will become apparent however, from the ensuing description, that the pulleys may be mounted on any portion of the equipment which does not move when the implement is raised and lowered.

The arms 23 and 24 are preferably formed with a pair of outwardly extending members 36 and 37 which converge at their ends to receive the marker. The

members 36 and 37 may be suitably reinforced by a transverse member 38.

The implement illustrated is supported by the spaced arms 41 and 42 which have their ends pivotally connected to the implement and to the rear of the tractor 43. An arm 44 is spaced between the members 41 and 42 and serves to rotate the same in response to pressure from the piston arm 46 of the hydraulic cylinder 47. Thus, by energizing the hydraulic cylinder, the arm 46 is drawn forward whereby the tool is lifted as illustrated in Figure 4. The tractor illustrated is of the track laying type, but it is to be understood that any suitable farm implement of the track laying or the wheel type may be employed. Further, the implement may carry its own hydraulic cylinder, in which event, portions of the implement are raised, while other portions are stationary. The particular embodiment shown is illustrative only and the invention is applicable to any type of implement adapted to be raised and lowered.

As previously described, the pulleys 33 and 34 are mounted on a portion of the unit which is stationary and the pulleys 31 and 32 are mounted on a portion which moves as the implement is raised and lowered. By properly locating the pulleys 33 and 34 more line is required to span the distance between the pulley 31 over the pulleys 33 and 34 and back to the pulley 32 when the implement is raised than when the implement is lowered. As a result, both marker arms are lifted when the implement is raised. The location of the stationary pulleys and the length of the cable is chosen whereby both arms will be held in the raised position when the tool is in the inoperative position and the unlatched arm will be lowered when the tool is in the operative position. Thus it is seen that as the operator reaches the end of a traverse of a field and lifts the tool to turn, both markers will be automatically raised where they will not engage fences and other obstacles. The marker which is raised will serve to operate the marker mechanism in a manner which will be presently described, whereby when the tool is lowered, the opposite marker is lowered.

Referring now more particularly to Figure 5, we have shown the construction of the latch mechanism in detail. The posts 13 and 14 are shown next to one another, it being understood, of course, that these posts are disposed at the ends of the farm implement with which the marker is being used. Only the lower portion of the marker arms 23 and 24 are shown. As illustrated, the side member 36 is formed of tubular material which fits over the rod 51. The member 36 may be suitably adjusted along the rod 51 and then clamped in position by means of a bolt 52. The other end of the rod is pivotally mounted at one end of the pin 53. It is, of course, understood that a like construction is used for the spaced member 37 (Figure 2), not shown in this figure. A lever arm 54 has one end suitably attached to the rod 51, for example, by welding, and its other end engaged by the flexible line 30. A reinforcing member 56 is provided between the end of the member 54 and the member 51 and may be suitably secured to both members, as, for example, by welding. The opposite marker arm 24 is of the same construction and therefore like reference characters will refer to like parts. Referring particularly to Figure 9, the spaced members 51 are shown engaging the transverse pin 53 which is journalled in the members 58.

A transverse angle member 59 (Figures 5 and 9) is attached to the spaced rods 51. The transverse member is suitably located along the arm whereby it is engaged by the notch 60 formed in the latch 17, as will be presently described. The transverse member 59 also serves to support a plate 61 which has one end suitably affixed thereto, as, for example, by welding. The other end of the member 61 pivotally mounts the push member 62. A bolt 63 passes through the member 61 through an enlarged opening in the member 62 and is adapted to accommodate a spring 64 thereon. A suitable washer 65 and nut 66 serve to hold the spring 64 on the bolt 63. The head of the bolt 63 is suitably welded to the member 61 whereby it may not move with respect thereto. This assembly serves to urge the pushing member 62 towards the plate 61.

The latches 16 and 17 are preferably formed from an angle arm whereby the surfaces 68 are provided on which the rollers 69 may ride for purposes to be presently described. The latches 16 and 17 are pivotally attached to the associated post. Plates 71 are suitably attached to the posts, as, for example, by welding, to form surfaces 72 and 73 which limit the movement of latches 16 and 17 in their two positions, as illustrated in Figure 5 in the left and right-hand portions of the drawing. An ear 76 is suitably attached to the upper surface of the latch and extends outwardly therefrom. The ear 76 serves to mount the deflection rod or member 77. For example, the member 77 may comprise a threaded rod which accommodates a pair of nuts 78 and 79 which serve to engage the ear 76 to hold the deflection member secure.

Rollers 69 are each secured to a rod 81 which is accommodated within a cylindrical housing 82. A spring 83 is inserted between the end of the rod 81 and the closed end of the cylinder 82 and serves to urge the rod 81 outward. The closed end of the cylindrical housing 82 is pivotally mounted on the associated post.

The roller assembly is pivotally engaged by the ends of the tie rod or link 21. The length of the tie rod 21 is predetermined whereby the rollers 69 will assume positions as illustrated in Figure 5. The tie rod may be formed in two portions with a member which is adapted to engage the portions whereby the length of the rod may be adjusted to accommodate various spacings between the rollers such as might be encountered when mounting the marker mechanism on different tools. One of the rollers will tend to urge the associated latch into an unlatched position, while the other rollers will tend to urge the latch into a latched position. I. e., the rollers 69 will alternately assume positions on one or the other side of the pivot point. Abutments 86 are formed on the ends of the rods and are adapted to be engaged by the push members 62, as will be presently described.

The cylindrical portion 82 of the roller assembly is engaged by U-shaped members 87 which guide the assembly and serve to limit the travel in either direction as the tie rod is urged to the right or to the left.

Operation of the marker mechanism may be best understood with reference to Figures 5, 7 and 8. Referring to Figure 5, the marker mechanism is shown in the position which is attained when the implement is in the inoperative position. The right-hand marker in Figure 5 is latched with the roller to the left of the pivot point. The push member 62 is deflected downwardly by means of the deflection member 77 whereby the link 21 and the abutment 86 may move to the right to unlatch the latch 17 when the opposite marker is raised, as will be presently described. When the tool is lowered, the distance between the stationary and movable pulleys will be decreased whereby the left-hand marker will be lowered to its operating position as shown in Figure 7. When the tool is again raised into the inoperative position, the distance between the movable and fixed pulleys will be increased and the cable will exert a pull on the lever 54 to lift the marker as indicated by the arrows 91 and 92 (Figure 8). The pushing member 62 is in contact with the member 61. As the marker is raised, the push member engages the abutment 86 to urge the tie rod 21 to the right. As the tie rod 21 is urged to the right, the left-hand roller 69 travels to the right as shown in Figure 8. When it has travelled past the pivot point it urges the notch end of the lever downwardly whereby the notch 60 engages the transverse member 59. The deflection pin or member 77 serves to urge the push rod downwardly whereby it will ride free of the abutment 86 to

permit travel of the link to the left when the opposite marker is lifted.

Referring now to Figure 5, it is seen that the right-hand abutment can travel to the right whereby the roller may move to the right past the pivot point and urges the latch upwards thereby releasing the right-hand marker. Thus it is seen that the left-hand marker which is raised is latched, while the right-hand marker is unlatched thereby being in readiness to be lowered when the tool is lowered. When the tool is again lowered the right-hand marker will be lowered into the operative position. The markers will then be alternately raised and lowered as the implement is raised and lowered.

We claim:

1. A marker mechanism for use with implements of the type which are raised into an inoperative position and lowered into an operative position comprising a pair of markers, mounting means, a latch associated with each of said markers pivotally mounted on said mounting means, a roller assembly associated with each of said latches and pivotally mounted on said mounting means whereby the roller engages the associated latch, a link serving to engage said roller assemblies, an abutment carried by each

of said roller assemblies, a push member carried by said markers and adapted to engage said abutment, means for raising the operative marker when the implement is raised, said push member engaging the associated abutment to push the rollers whereby the raised marker is latched and the opposite marker is unlatched.

2. Apparatus as in claim 1 wherein said means for raising the markers comprise a flexible line having its ends attached to the markers, a pair of pulleys disposed between said markers receiving said line and mounted for movement with said implement, and a stationary pulley receiving said line whereby when the implement is lifted the relative movement between the stationary and the pair of pulleys serves to bring the line under tension to raise the operative marker.

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