

FIG 1

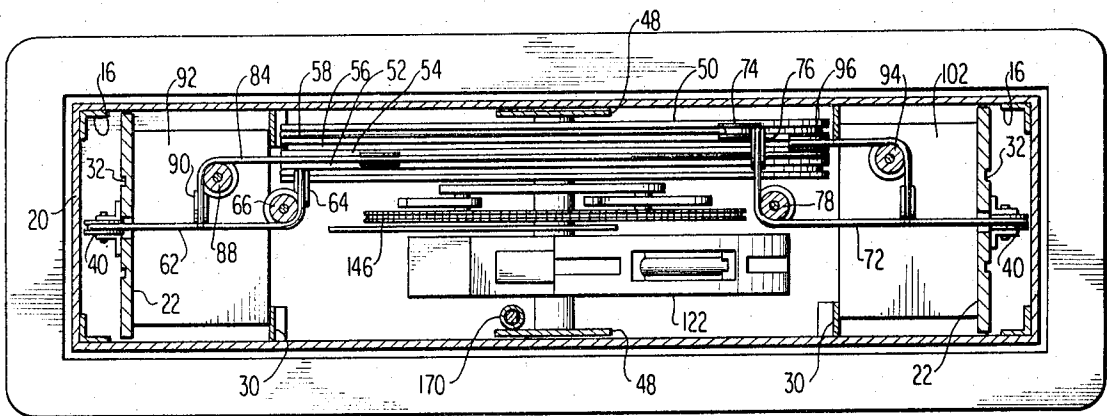
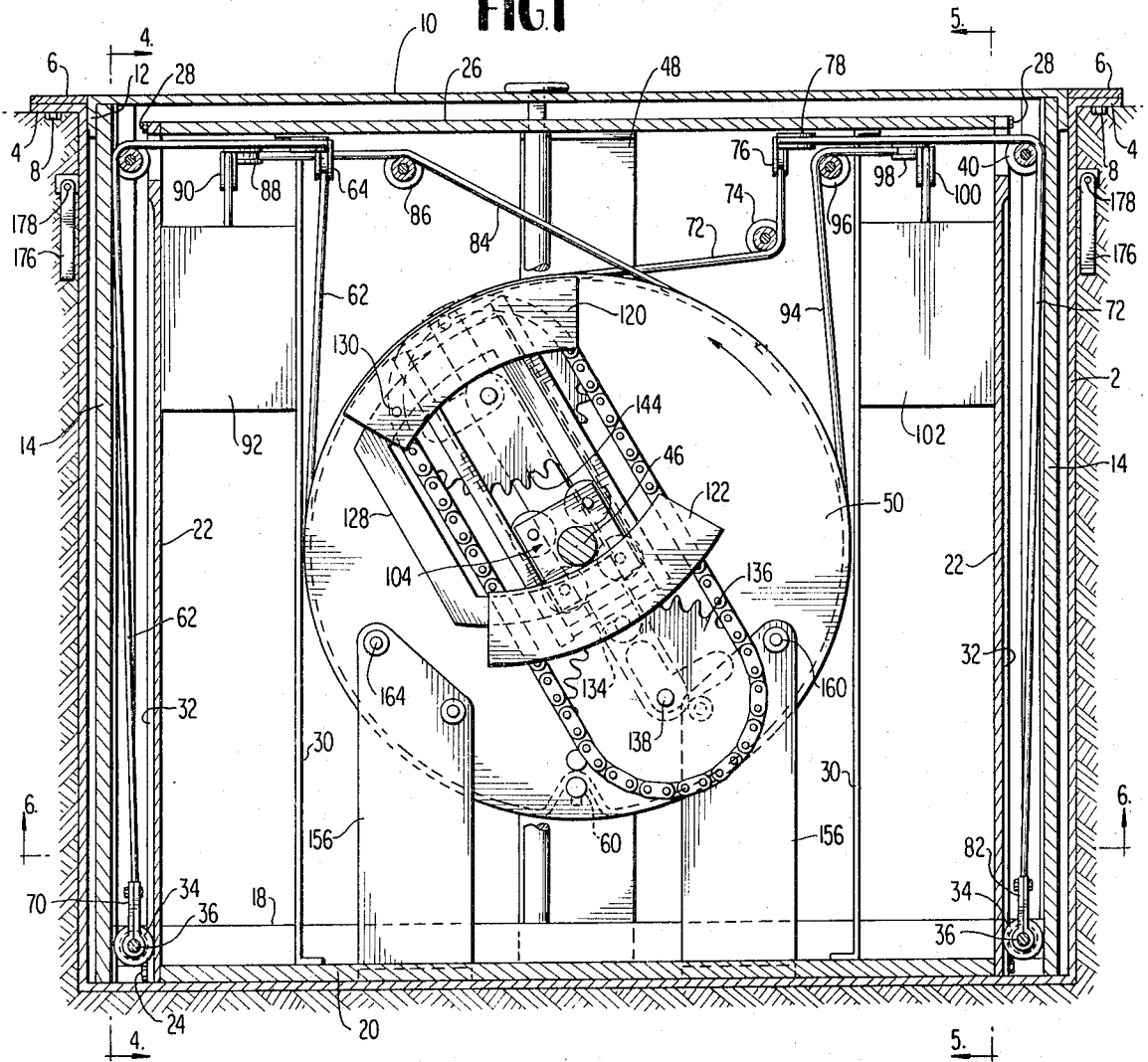


FIG 2

FIG 4

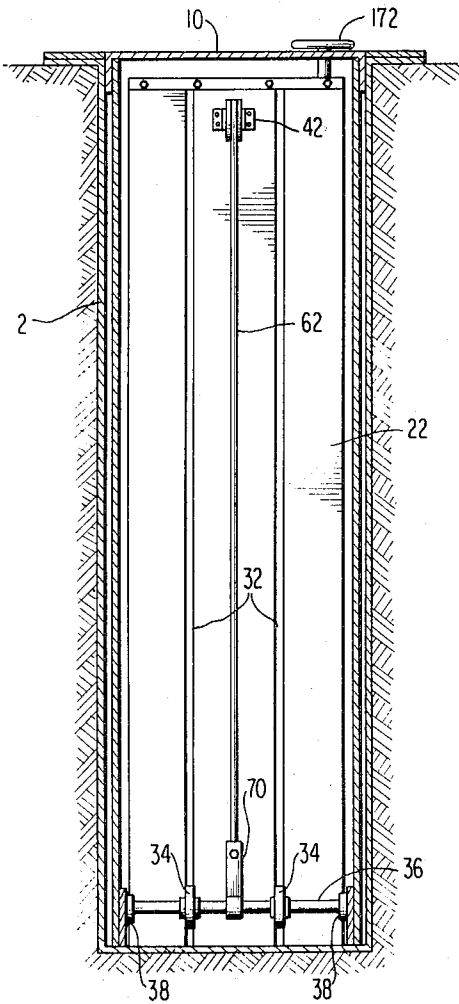


FIG 5

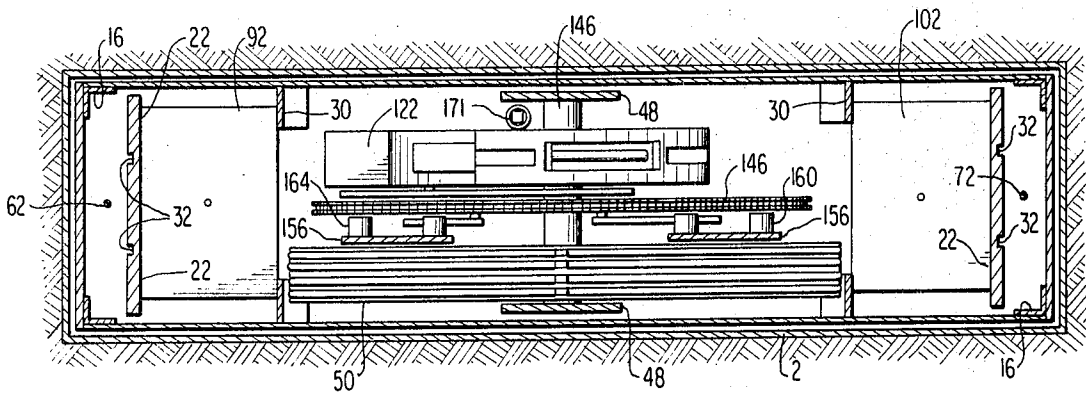
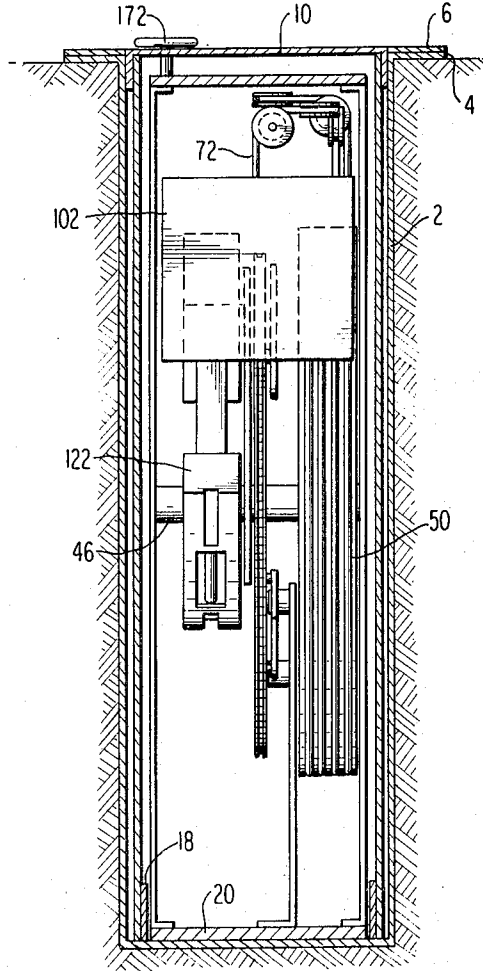


FIG 6

FIG 7

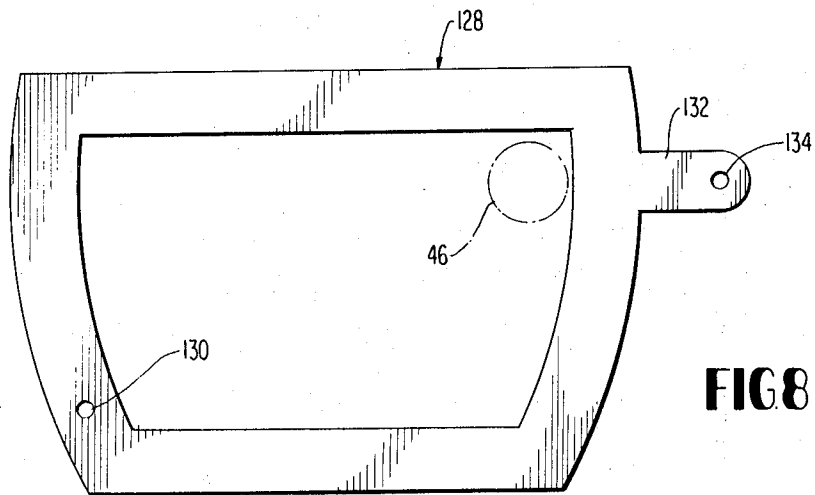
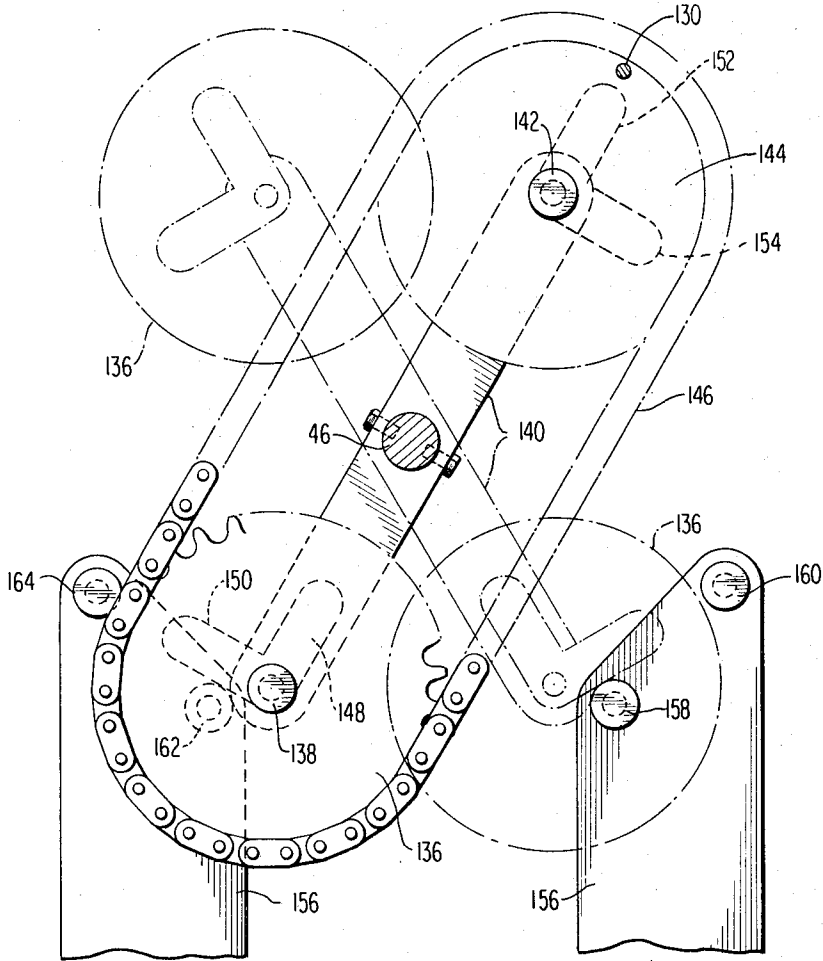


FIG 8

FIG 9

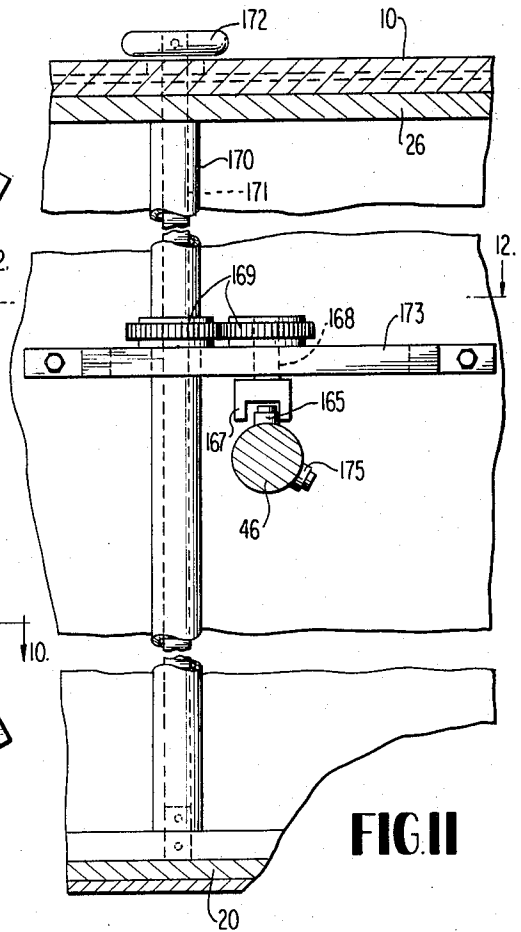
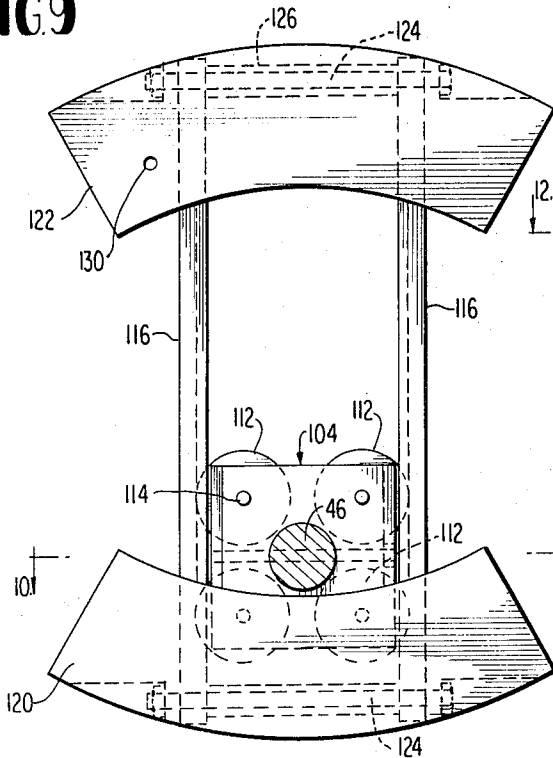


FIG 11

FIG 10

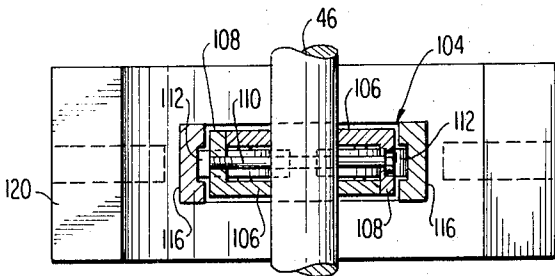


FIG 14

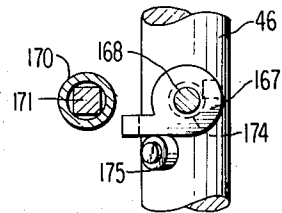


FIG 13

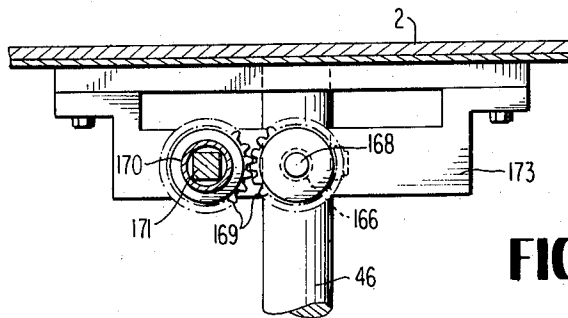
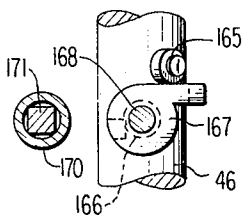


FIG 12

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DISPLAY DEVICE

SUMMARY OF THE INVENTION

This invention relates to improvements in display devices such as grave markers and tombstones.

In perpetual cemeteries, it has been the practice heretofore to provide either grave markers or tombstones or both. Often the tombstones would interfere with the proper care of the area, mowing of grass, etc., which could be accomplished more readily if the tombstones could be removed. However tombstones, as provided heretofore, are rigid structures and in order to maintain proper care, this has required manual attention of the grounds at great expense. No provision has been made heretofore for the alternate use of the same structure, either as a grave marker or as a tombstone.

Devices have been suggested heretofore for use as displays in retracted or extended positions. Such devices, however, have not involved structures capable of use alternately as grave markers and tombstones.

One object of the invention is to provide a structure that can be installed under ground and have provisions for use alternately as a grave marker or tombstone and to be shifted from one position to another as, for example, being moved from an elevated position to a recessed position when care of the grounds is to be facilitated.

Another object of the invention is to provide for movement of the display or marker portion to alternate positions by use of counterweights that will require little manual labor in effecting the transposition thereof.

Still another object of the invention is to provide a display device which may be manufactured in uniform quantities and to be utilized by the user thereof either as a grave marker or as a tombstone.

These objects may be accomplished according to one embodiment of the invention by providing in a housing that is adapted to be installed under ground substantially at ground level a retractable display device which may have a display panel that can be located substantially at ground level or lifted to an elevated position thereabove to function as a tombstone. Suitable operating mechanism will accomplish the raising and lowering movements of the display device through appropriate counterweights so as to require little manual action. By a shifting movement of the counterweight means in the raising and lowering action of the display device, this will function substantially automatically upon appropriate release under manual control.

BRIEF DESCRIPTION OF THE DRAWINGS

This embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a vertical section through the device in retracted position;

FIG. 2 is a cross section therethrough on the line 2—2 in FIG. 3;

FIG. 3 is a vertical section through the device in raised position;

FIG. 4 is a cross section through the device on the line 4—4 in FIG. 1;

FIG. 5 is a similar view on the line 5—5 in FIG. 1;

FIG. 6 is a horizontal section through the device on the line 6—6 in FIG. 1;

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FIG. 7 is a side elevation, partly in section, showing the counterweight shifting mechanism;

FIG. 8 is a side elevation of the counterweight shifting segment;

FIG. 9 is a side elevation of the counterweight assembly;

FIG. 10 is a cross section therethrough on the line 10—10 in FIG. 9;

FIG. 11 is a side elevation, partly in section, through the manual control mechanism;

FIG. 12 is a cross section therethrough on the line 12—12 in FIG. 11;

FIG. 13 is a diagrammatic top plan view of the resetting mechanism in one position; and

FIG. 14 is a similar view thereof in another position.

DETAILED DESCRIPTION OF DISCLOSURE

The display device shown in the preferred embodiment of the invention has provision for raising movement to an elevated position, forming a tombstone, or for lowering movement to a recessed position, forming a marker at the ground surface. In this embodiment of the invention, the device and its operating mechanism are intended to be mounted below ground level.

Accordingly, a housing, generally indicated at 2, is sunk into a recess in the earth so that the upper edge of the housing is substantially at ground level. The housing 2 has surrounding walls and a bottom, all of which is fabricated so as to be liquid-tight and with a surrounding flange 4 on the upper edge of the surrounding walls. An ornamental ring 6 is seated upon the flange 4 and secured thereto by suitable fastenings, such as screws 8. The inner edge of the ring 6 is substantially in registry with the inner faces of the surrounding walls of the housing 2, and may be provided with a sealing gasket on the inner edge thereof to exclude water from the interior of the housing.

A display member or panel 10 extends horizontally over the area of the housing 2 inside the surrounding ring 6, as illustrated in FIG. 1. This display member 10 has a surrounding flange 12 which extends downward inside the side walls of the housing 2. Marker end walls are shown at 14, illustrated more clearly in FIG. 3, and which depend from the display panel 10 inside the housing 2 extending substantially throughout the height of the latter when the marker is in a lowered position, as shown in FIG. 1. The walls 14 are stiffened or reinforced by corner braces 16 which are illustrated in FIG. 2. The lower ends of the corner braces 16 at opposite ends of the marker panel 10 are connected together by side bars 18 extending lengthwise of the housing.

The display casing formed by the panel 10 and depending sides is capable of raising and lowering movements with respect to the housing 2, sliding in telescoped relation with the latter between the positions illustrated in FIGS. 1 and 3. Provision is made for effecting such raising and lowering movements and for guiding the relation of these structures.

A supporting frame structure is mounted in the housing 2. This supporting frame structure includes a support member 20 seated upon the bottom of the housing 2. Connected at opposite ends of the support member 20 are end support plates 22 which extend from the bottom substantially to the top of the housing 2. These support plates 22 are spaced from the adjacent end walls of the housing 2 in the manner illustrated in FIGS.

1 and 3. Suitable fastenings, such as bolts 24, are used to secure the end support plates 22 to the bottom support member 20 so as to form the frame, the parts of which are in rigid relation to each other and in a fixed position in the housing 2.

The upper ends of the end support plates 22 are connected together by a top support member 26 which extends between the end supports 22 and is secured rigidly thereto by suitable fastenings 28. These members 20, 22 and 26 thus form a fixed rectangular supporting structure within the housing 2, seated in fixed relation upon the bottom of the housing and upstanding throughout the height thereof. Side guides are shown at 30 extending between the bottom and top supports 20 and 26, respectively, and secured rigidly thereto. One of these guides 30 is adjacent, but spaced from, each of the end supports 22 to receive a counterweight therebetween in guided relation therewith as hereinafter described.

The movable panel assembly 10-14 is in guided relation with the frame structure 20-26.

Each of the end supports 22 has a plurality of keyways 32 (FIG. 6) formed in the outer face thereof in upwardly extending parallel relation from the lower end substantially to the upper end of the end support. Operatively mounted in the keyways 32 are rollers 34 which are mounted on a cross shaft 36 journaled at the lower end of each of the end panel walls 14. Bearings are shown at 38 (FIG. 4) forming journals for each shaft 36.

At the upper end of each end support plate 22 a guide roller 40 is mounted in a bearing assembly 42 for guiding one of the cables, as hereinafter described.

The raising and lowering movements of the display panel assembly are controlled by mechanism mounted on a central shaft 46 extending transversely between opposite sides of the frame 20-26. The opposite ends of the support shaft 46 are journaled in bearings provided in upright intermediate supports 48 which are secured at their lower ends to the bottom support 20 and at their upper ends to the top support 26. These intermediate supports 48 are located at opposite sides of the supporting frame structure.

Mounted upon the shaft 46 and fixed thereto is a wheel, generally indicated at 50. This wheel 50 is of large diameter relative to the transverse and vertical area of the display device. The wheel 50 is provided with a plurality of circumferential grooves, indicated respectively at 52, 54, 56 and 58 (FIG. 2) and which preferably extend substantially around the circumference of the wheel. A cord clamp 60 of conventional construction is provided at one segment of the wheel, as illustrated in FIG. 1.

A cord 62 is anchored at one end by the clamp 60 to the wheel 50. This cord 62 extends in the groove 52 (FIG. 2) and upwardly therefrom around a guide wheel 64, thence around a second guide wheel 66 to the guide wheel 40 mounted at the upper end of one of the frame sides 22. From the guide wheel 40, the cord 62 extends downward to an anchoring device, generally indicated at 70, mounted at the lower end of one of the end panel walls 14, and may be connected with the shaft 36.

In like manner, a cord 72 has one end extending through the groove 58 to the anchor clamp 60. This cord 72, after passing over the top of the wheel 50, extends around guide pulleys 74, 76, 78 and 40, from which latter the opposite end of the cord 72 extends

downward to a suitable clamp 82 at the lower end of the other end display panel 14 (FIG. 3).

It will be apparent that these cords 62 and 72 will effect raising and lowering movements of the display panel assembly upon rotation of the wheel 50 in respective opposite directions.

Another cord is shown at 84 extending in the groove 54 of the wheel 50 with one end anchored to the wheel by the clamp 60. The cord 84 extends over guide pulleys 86, 88 and 90 and downwardly from the latter to a connection with a counterweight 92 at one end of the frame assembly.

A cord 94 extends in the groove 56 of the wheel 50, with one end anchored by the clamp 60. This cord 94 extends over guide wheels 96, 98 and 100 to a counterweight 102 to which it is secured.

The counterweights 92 and 102 are in guided relation between the upright guide plates 30 and the respective adjacent end support plates 22 so as to be raised and lowered upon rotation of the wheel 50. These counterweights 92 and 102 substantially balance the weight of the display panel assembly. The counterweight cords 84 and 94 extend in one direction around the wheel 50, while the cords 62 and 72, secured to the display panel structure, extend in the opposite direction around the wheel. One of the counterweights 92, 102, may be omitted, if desired, and the remaining one be sufficient to produce appropriate movement of the marker assembly. These counterweights reduce the power needed to raise the tombstone and also equalize the power on back and forth movements.

Mounted on the shaft 46 intermediate the wheel 50 and one side of the casing is a carriage, generally indicated at 104 (FIG. 9). This carriage comprises a pair of side plates 106, each of which has an angular flange 108 overlapping the adjacent lateral edge of the other plate and extending along one side of the carriage. A bolt 110 extends through one of the flanges 108 and is threaded into the other and passes through the shaft 46, thereby securing the parts of the carriage together and also keying the carriage 104 to the shaft 46 to turn therewith.

Rollers 112 are mounted between the plates 106, being journaled on pins 114 which extend in parallel relation between the side plates 106 of the carriage and providing for free rotation of the rollers. Each of the rollers is of a size and position that its edge projects through a slot formed in the adjacent flange 108 on one of the side plates 106 to provide for anti-friction guiding of the carriage.

Mounted on the rollers 112 are side bars 116, each of which has a groove (FIG. 10) in the inner face thereof to maintain a guided relation on the rollers 112. These side bars 116 extend in parallel relation embracing opposite edges of the carriage 104 with the projecting edges of the rollers 112 extending in the grooves of the side bars 116. This provides for rectilinear movement of the side bars with respect to the carriage in guided relation thereto so as to move back and forth with respect to the shaft 46.

The opposite ends of the side bars 116 are connected with counterweights 120 and 122, respectively, by bolted connections or other fastenings, generally indicated at 124. Sleeves 126 surround the bolts 124 so as to hold the opposite ends of the side bars 116 in properly spaced relation in a rectangular assembly which is maintained for back and forth movement with respect

to the shaft 46 and yet will securely fasten the respective weights 120 and 122 to the opposite ends of this frame.

A generally rectangular segment is shown at 128 (FIG. 8) surrounding the shaft 46. One end portion of the segment 128 is pivotally connected to the counterweight at 130, while the opposite end portion is provided with an arm 132 pivotally connected at 134 with a sprocket wheel 136 (FIGS. 1 and 3) eccentrically of the latter and near its periphery. The sprocket wheel 136 is journaled at 138 on one end of a lever 140 (FIG. 7). The lever 140 is fixedly mounted intermediate its ends on the shaft 46 so as to swing back and forth upon rotation of the shaft in opposite directions, as indicated in FIG. 7.

The opposite end of the lever 140 has journaled thereon at 142 a second sprocket wheel 144. A sprocket chain 146 extends around the sprocket wheels 136 and 144 so as to transmit movement from one to the other and to cause them to rotate together and to the same extent.

Also mounted on the lever 140 but fixed to the sprockets 136 and 144 are bellcranks. These bellcranks will cause rotation of the sprocket wheels. One of these bellcranks on the sprocket 136 has fingers 148 and 150. The bellcrank on the sprocket 144 has fingers 152 and 154. As the lever 140 swings back and forth, its lower end is disposed intermediate upright supports 156 carried by the base 20 in fixed relation to the latter. The upper end of one of the supports has a pair of stationary rollers 158 and 160. The upper end of the other support 156 has a pair of stationary rollers 162 and 164.

The operation of the shaft 46 is controlled by hand mechanism, as illustrated in FIGS. 11 and 12. The shaft 46 is provided with resetting pins or rollers 165 and 166 spaced apart sufficiently for the proper degree of turning movement of the shaft. These pins or rollers 165, 166 are in the path of one of the arms of a segment 167 and which arm is in position for engagement therewith.

This segment 167 is mounted on a shaft 168 connected by interengaged gears 169 with a sleeve 170. A shaft 171 has a squared connection or keyway connection with the sleeve 170 and is slidable axially relative thereto. The shaft 171 extends upwardly through the panel assembly 10 to an accessible position above the panel 10. The upper end of the shaft 171 is provided with a hand wheel 172 for manual turning of the shaft. The shaft 171 will move upward and downward with the display panel assembly. The sleeve 170 and the projecting portion of the shaft 171 are journaled in slidable bearings in the supporting frame structure, including a bracket 173, for freedom of turning movement.

The shaft 46 also has a second pair of rollers 174, 175, mounted on the shaft 120° from the rollers 165, 166 in position to engage the other arm of the segment 167.

When the marker assembly 10 is moved to one extreme position, it is held in this position against reverse movement by the manual control mechanism 165-172, until released.

The handwheel 172 is turned in a counterclockwise direction to release the shaft 46, being moved 90° to turn the segment 167 90° in a clockwise direction as viewed in FIGS. 13 and 14. This moves the one arm of the segment out of the path of the roller 166, allowing

the shaft to turn 120° in a clockwise direction. This movement is stopped by engagement of the roller 173 with one arm of the segment. Thus the tombstone is moved down.

To raise the tombstone, the handwheel 172 is again moved 90°, in a counterclockwise direction, also turning the segment 167 through 90°. This releases the roller 175 for turning movement of the shaft 46 in the opposite direction through 120°.

The housing 2 may be provided, if desired, with suitable handles 176 on opposite ends thereof for lifting or carrying the housing or the entire marker assembly. These handles 176 may be pivoted to the end walls of the housing 2, as indicated at 178.

OPERATION

The parts are in position, as shown in FIG. 1, wherein the display panel 10 is substantially at ground level. This panel assembly may be elevated from the position in FIG. 1 to the position in FIG. 3, with substantially no manual power needed except to turn the shaft 170. The weight of the elevated panel assembly, including the display panel and side walls, is substantially balanced by the counterweights 92 and 102.

With the display panel 10 lowered, as in FIG. 1, it is first necessary to release the shaft 46. This is accomplished by turning the shaft 170 by the hand wheel 172, thereby acting through the gears 168 (FIG. 11) to move the segment 167 out of the path of the pin 165. This releases the shaft and allows it to turn.

The counterweights 92 and 102 in their elevated positions (FIG. 1) will act on the wheel 50 through the cords 84 and 94 to turn this wheel through 120° in the direction of the arrow in FIG. 1. This rotation of the wheel will, in turn, act through the cords 62 and 72 to elevate the panel assembly.

As the wheel 50 turns counterclockwise in FIG. 1, the lever 140 will swing through 120°. The stationary rollers 162, 164 are in the path of movement of the bellcrank arms 148 and 150. During the swinging movement of the lever 140, the arm 148 will strike the stationary roller 164 and thereafter the arm 150 will strike the roller 162. These are connected with the sprocket wheel 136 and will cause rotation of the sprocket wheels through 180°.

Initially the counterweight 122 is spaced further from the axis of the shaft 46 than the other counterweight 120, and on one side of an upright plane through the axis. Thus, upon release of the lock at 165-167, the counterweight 122 will rotate the wheel 50 as described.

The bearing assembly 104 supports the counterweights 120-122 for sliding movement back and forth relative to the shaft 146. This motion is accomplished by the segment 128 which is moved rectilinearly by its pivotal connection 134 with the sprocket 136 and by its pivotal connection 130 with the counterweight 122. Thus, the counterweights 120-122 will be shifted each time the wheel 50 moves through a cycle, and thus will be ready to shift the wheel back to the opposite position, the stationary rollers 158-160 acting on the arm 152-154 in the same manner as described with respect to the arms 148-150.

The display panel assembly will be raised from the marker position shown in FIG. 1 to the position shown in FIG. 3, where it may function as a tombstone. This change can be made with little effort either to accom-

modate the device to different environments or to facilitate mowing or care, when desired.

The device can be manufactured in different sizes as found desirable, and converted to a marker or tombstone at the option of the user. This does not involve the heavy weight and cumbersome structure of a tombstone made of natural stone. Nevertheless, appropriate legends or markings may be applied to the marker panel, or laminated side walls, as desired.

The shifting of the display marker to a lowered position may be found desirable in the care of the grounds, mowing and trimming.

The device may be constructed of steel or other suitable material, such as laminated brass for the marker assembly. The wheel 50 may be made of wood. It may also be made in many different sizes as found desirable.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

I claim:

1. A display device adapted to be mounted underground, comprising a marker panel, means operatively connected with the marker panel for raising and lowering the same, counterweight means for effecting the operation of said raising and lowering means, and means for translating said counterweight means relative to said raising and lowering means thereby changing the direction of the action of said counterweight means.

2. A display device according to claim 1, wherein the operating means includes a rotary member actuated by the counterweight means.

3. A display device according to claim 1, wherein the means for raising and lowering the marker panel includes a rotary member having the counterweight means connected therewith in position for shifting the position of the marker panel upon turning of the rotary member.

4. A display device according to claim 1, wherein the raising and lowering means includes a rotary member having flexible devices connected from the rotary member to the marker panel for moving the latter as a result of turning the rotary member.

5. A display device adapted to be mounted underground, comprising a marker panel, a rotary member operatively connected with the marker panel for raising and lowering the same, counterweights operatively connected with the rotary member for counterbalancing said marker panel, locking means for holding the rotary member in predetermined set positions, and additional counterweight means for initiating movement of the rotary member upon release of the locking means.

6. A display device according to claim 5, including flexible devices operatively connecting the counterweights with the rotary member and additional flexible devices operatively connecting the rotary member with the marker panel for effecting movement of the marker panel in response to turning movement of the rotary member.

7. A display device according to claim 5, wherein the rotary member comprises a wheel having peripheral grooves therein, cords fixed at one end to the wheel, and extending through certain of the grooves to the marker panel and additional cords fixed at one end to

the wheel and extending through the grooves to the counterweights for transmitting motion from the rotary member to the marker panel.

8. A display device according to claim 5, wherein the additional counterweight means is operatively connected with the rotary member for movement therewith and is constructed for shifting movement transversely with respect to the axis of the rotary member.

9. A display device according to claim 5, wherein the additional counterweight means is bodily movable transversely of the axis of the rotary member and acts on the rotary member to effect turning movement thereof in respective extreme positions.

10. A display device according to claim 9, including means in position for shifting the action of the additional counterweight means during turning movement of the rotary member.

11. A display device adapted to be mounted under ground comprising a marker panel assembly, a cross shaft mounted for rotary movement, a wheel mounted on the cross shaft and having guiding grooves on the peripheral surface thereof, flexible devices connected at one end with the wheel and extending therefrom to the marker panel assembly for effecting raising and lowering movements of the assembly upon turning movement of the wheel, counterweight means, means mounting the counterweight means for shifting movement transversely with respect to the axis of the cross shaft, said counterweight means acting on the wheel to effect turning movement thereof, and means in the path of movement of the wheel for shifting the counterweight means to different positions with respect to the axis thereof during said turning movement.

12. A display device according to claim 11, including locking means for limiting the turning movement of the cross shaft and wheel to different circumferential positions.

13. A display device according to claim 11, including a housing adapted to be mounted under ground and to enclose the marker panel and operating mechanism therefor.

14. A display device adapted to be mounted under ground comprising a marker panel adapted to be mounted substantially at ground level and to be raised to an elevated position with respect to ground level, side and end plates connected with the panel and depending therefrom, a stationary frame beneath the marker panel having end plates spaced from the first mentioned end plates, a cross shaft extending transversely of the stationary frame and mounted thereon, a wheel mounted on the cross shaft for turning movement, said wheel having peripheral grooves therein, counterweights in guided relation with the stationary frame for raising and lowering movements with respect thereto, flexible devices fixed at one end to the wheel and extending through the grooves and to the end plates of the marker panel for raising and lowering the latter, additional flexible devices fixed at one end to the wheel and extending through the grooves therein and to the counterweights for turning the wheel in response to movement of the counterweights, a carriage mounted on the cross shaft and including roller means, a pair of counterweights disposed on opposite sides of the axis of the shaft and having means in guided relation with the rollers of the carriage for slidable movement of the counterweights to different positions with

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respect to the axis of the shaft, and means for effecting shifting movement of the counterweights upon turning of the wheel to a predetermined extent.

15. A display device according to claim 14, wherein the shifting means for the last mentioned counterweights includes a frame segment connected at one end with one of the counterweights, a sprocket wheel assembly mounted on the cross shaft and connected with the frame segment to effect shifting movement of the second mentioned counterweights upon turning of the

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sprocket wheel assembly, and means in the path of the turning movement of the sprocket wheel assembly for effecting actuation of said assembly to shift the positions of the second mentioned counterweights to different positions relative to the axis of the shaft.

16. A display according to claim 14, including locking means for holding the cross shaft and wheel in predetermined set positions.

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