

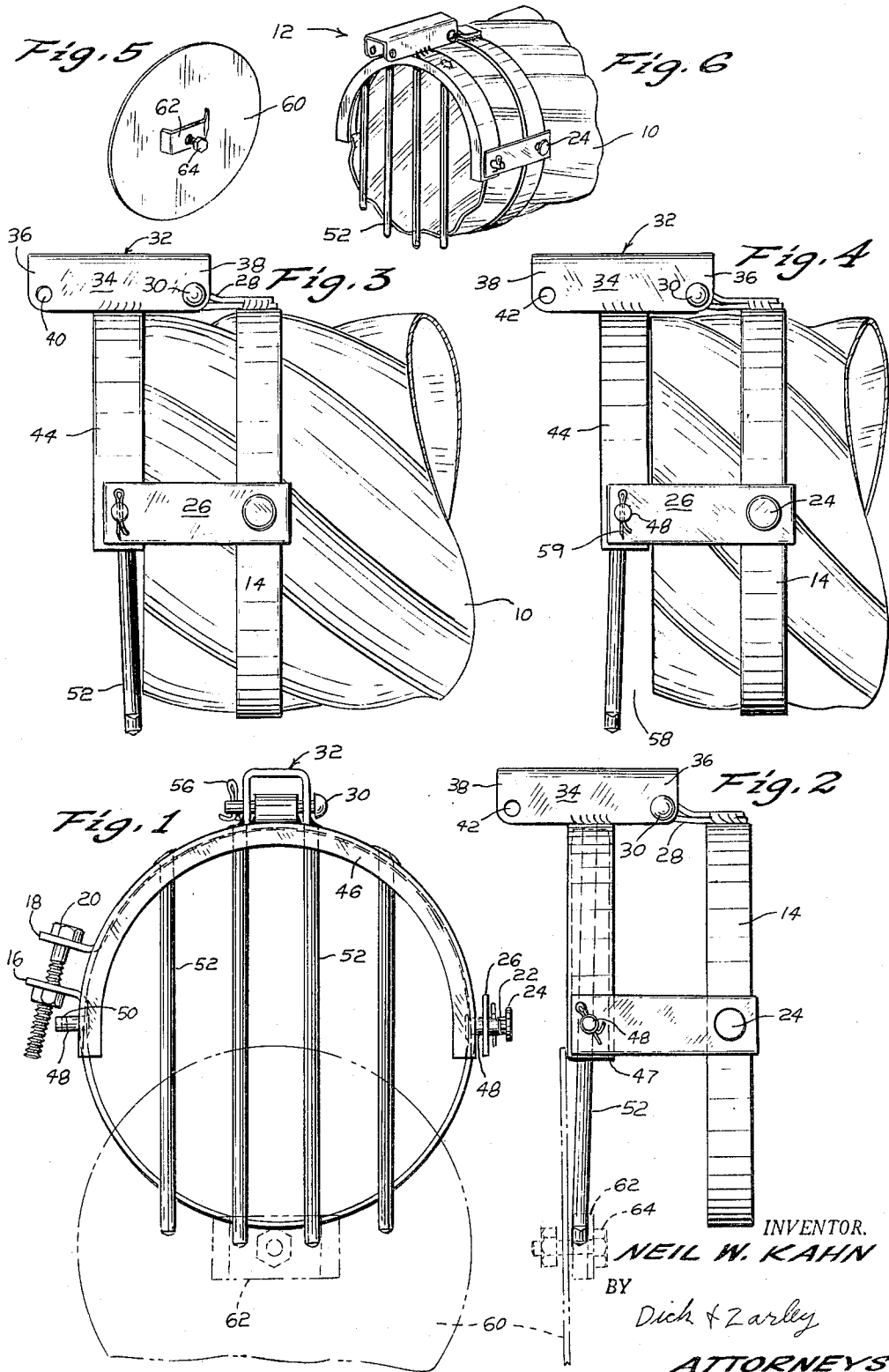
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COVER FOR DRAINAGE TILES

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**COVER FOR DRAINAGE TILES**  
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This invention relates to a cover for drainage tiles and in particular to a gate assembly for keeping out rodents or the like.

Farm drainage tiles provide an ideal nesting place for certain rodents; however, as may be expected, the construction materials used by the rodent to build a nest, clog up the tile and obstruct the movement of drainage water therethrough.

Therefore it is an object of this invention to provide a cover for the outlet end of drainage tiles which will prevent rodents or the like from entering the tile but yet allow discharge of drainage water therefrom.

Another object of this invention is to provide a gate assembly for drainage tiles which hangs normally by gravity in a closed position.

A still further object of this invention is to provide a gate assembly for drainage tiles which may be locked in a closed position.

A still further object of this invention is to provide a gate assembly for drainage tiles which is easily adjusted to vary the size of the outlet opening.

A still further object of this invention is to provide a gate assembly for drainage tiles which may completely close the end of the drainage tile to prevent flood waters from backing up into the tile.

Another object of this invention is to provide a gate assembly for drainage tiles or the like which is readily secured to and removed from the end of the drainage tile.

A further object of this invention is to provide a cover for drainage tiles which is simple in design, economical to manufacture and refined in appearance.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings, in which:

FIG. 1 of the drawings is an end elevation view of the gate assembly of this invention with an imperforate disc plate shown in phantom as it is being mounted on the gate assembly;

FIG. 2 is a side elevation view of the gate assembly of FIG. 1 including the disc plate shown in phantom;

FIG. 3 is a side elevation view of the gate assembly mounted on the end of a drainage tile with the gate unit in its completely closed position;

FIG. 4 is a view similar to FIG. 3 showing the gate assembly mounted on the end of a drainage tile but with the gate unit reversed and thereby partially opening the end of the tile;

FIG. 5 is a perspective view of the imperforate disc plate and its clamping element; and

FIG. 6 is a perspective end view of the gate assembly mounted on the discharge end of a drainage tile.

Although clay tile are used primarily for drainage tiles, the last few feet of the outlet end are commonly metallic cylindrical units such as the cylindrical metal pipe or tube 10 in FIG. 6. The gate assembly of this invention is referred to generally in FIG. 6 by the reference numeral 12.

An adjustable cylindrical strap-type clamp 14 is provided which has a pair of end portions 16 and 18 connected by a bolt member 20 as shown in FIG. 1 of the drawings. Also shown in FIG. 1, is a pin 22 extending

horizontally outwardly of the strap clamp 14. The pin 22 is provided with an enlarged outer end portion 24 to retain thereon a locking plate element 26, the function of which will be hereinafter described in greater detail. At the top side of the strap clamp 14, a hinge 28 is formed by a plate element bent back upon itself with its ends welded to the clamp 14. A pin 30 is thus held between the two folded portions of the hinge 28. The pin 30 pivotally connects a gate unit 32 to the clamp 14.

The gate unit 32 includes an inverted channel-shaped arm member 34 having ends 36 and 38 with holes 40 and 42 formed therein respectively. An arcuate channel-shaped frame member 44 semicircular in shape is welded intermediate its ends to the lower flange edges of the channel-shaped member 34. The integral side wall flanges 46 and 47 extend inwardly along the entire length of the channel-shaped frame 44 as best seen in FIG. 2. At each end of the frame 44, a pin 48 is fixedly secured and is provided with a keyhole 50. As shown in FIG. 1, a plurality of spaced apart finger members 52 are fixedly secured at their upper ends to the base portion of the channel-shaped frame member 44 and extend in parallel relationship downwardly therefrom. As seen in FIG. 2, the finger members 52 are spaced at their upper ends from the channel side wall flanges 46 and 47. Also it is seen that the finger members 52 extend at a small angle to the frame 44 and thus are at a slight angle to a normal plane extending transversely through the channel-shaped arm member 34. By comparing FIGS. 3 and 4 it is seen that when the gate unit 32 is pivotally connected to the hinge 28 by the arm end 38, the finger members 52 extend inwardly towards the clamp 14 and the peripheral end edge of the tile 10. Similarly, when the gate unit 32 is pivoted by the arm end 36 (FIG. 4) to the hinge 28, the finger members 52 extend outwardly from the clamp 14 and the peripheral end edge of the tile 10. Changing the gate unit 32 from the position of FIG. 3 to position of FIG. 4 is easily accomplished by simply removing the pin 30 from the hinge 28 and placing it in the appropriate hole in either end 36 or 38 of the arm 34. A cotter pin 56 (FIG. 1) is provided to prevent an accidental removal of the pin 30.

Thus it is seen that when the finger members 52 extend outwardly from the discharge end of the tile 10, as shown in FIG. 4, a space 58 is defined therebetween which permits a greater discharge of water and debris from the tile 10.

Although the gate unit 32 normally hangs in a closed position as shown in both FIGS. 3 and 4 by the forces of gravity, it may be held positively in its closed position by the locking plate 26 which engages at its free end either of the pins 48 on the frame channel member 44 and is held in position by a cotter pin 59.

As also seen in FIGS. 3 and 4 it is noted that the gate unit 32 is limited in its downward pivotal movement by the lower edges of the arm 34 side wall flanges bearing against the top of the tile 10.

When it is desired to prevent flood waters or the like from entering the tile 10, a disc plate 60 which is imperforate may be mounted on the gate unit 32. A channel-shaped clamp plate 62 is adjustably secured by a bolt 64 to the center of the plate 60. As shown in FIGS. 1 and 2, two of the finger members 52 are adapted to extend between the plate 60 and the clamping channel plate 62 for holding the plate 60 in place. Also the adjacent side wall flange 46 or 47 of the frame 44 will serve as a guide and limiting means for the plate 60 to center it in a position where it will be co-extensive with the area covered by the finger members 52 across the outlet end of the tile 10.

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Thus it is seen that this invention provides a very versatile cover for drainage tiles which is simple in construction and adjustable for use as needed.

Some changes may be made in the construction and arrangement of my cover for drainage tiles without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. A gate assembly for drainage tiles, comprising, a cylindrical clamp member adapted to embrace a cylindrical tile, an arm pivotally connected to said clamp member, a gate unit having a frame member connected to said arm, at a point spaced from said pivotal connection to said clamp member, and a plurality of spaced apart finger members connected to said frame member, said gate unit adapted to pivot to an open position at an angle to the end plane of a tile, and to a closed position adjacent the end of a tile, said fingers having a length sufficient to extend substantially across the open end of a tile, and said fingers being disposed in a plane at an angle to a normal transverse plane to said arm when said gate unit is in said closed position, said arm having pivotal means on the opposite side of said finger members from the point of said first mentioned pivotal connection to said clamp member, whereby said gate unit may be reversed and pivotally connected to said clamp member by said pivotal means thereby positioning said finger members at an angle in the opposite direction from said normal plane.
2. A gate assembly for drainage tiles, a clamp means adapted to be secured to a tile, a gate unit having a frame member, an arm connected between its ends to the top of said frame member, a plurality of spaced apart finger members connected to said frame member, pivotal means provided on either end of said arm and adapted to be connected to said clamp member, said finger members disposed at an angle to a perpendicular plane extending through the plane of said arm whereby said fingers when in a substantially vertical plane extend towards said clamp member when said arm is pivotally connected by one of said pivot means to said clamp means and extend away from said clamp member when said other pivot means is connected to said clamp means, and means for limiting the pivotal movement of said gate unit towards said clamp member and adapted to maintain a predetermined space between the lower end of said finger members and the bottom edge of a tile.
3. The gate assembly of claim 2 and wherein a lock element extends between said frame member and said clamp means to prevent pivotal movement of said gate unit away from said clamp means.
4. The gate assembly of claim 3 and wherein an impermeforate disc plate is provided with a detachable clamping means adapted to engage at least one of said finger members, the area of said disc plate being substantially co-extensive with the area of said gate unit when the disc plate is secured to the finger of said gate unit.
5. The gate assembly of claim 3 wherein the means for limiting pivotal movement of said gate unit is the arm which is adapted to bear against the top side of a tile on which said clamp means may be secured.

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6. A gate assembly for drainage tiles, comprising, a cylindrical clamp member adapted to embrace a cylindrical tile, an arm pivotally connected to said clamp member, a gate unit having a frame member connected to said arm, at a point spaced from said pivotal connection to said clamp member, and a plurality of spaced apart finger members connected to said frame member, said gate unit adapted to pivot to an open position at an angle to the end plane of a tile, and to a closed position adjacent the end of a tile, said fingers having a length sufficient to extend substantially across the open end of a tile, and wherein said frame of said gate unit is arcuate in shape and has two end portions extending away from said arm on opposite sides thereof, and said frame has an inwardly extending flange portion which is spaced from said finger members, a disc plate is provided having detachable clamping means for engaging one of said finger members, said disc plate is adapted to be positioned between said finger members and said flange with said flange serving as a guide and a stop means to limit movement of said disc member relative to said finger members.
7. A gate assembly for drainage tiles, comprising, a cylindrical clamp member adapted to embrace a cylindrical tile, an arm pivotally connected to said clamp member, a gate unit having a frame member connected to said arm, at a point spaced from said pivotal connection to said clamp member, and a plurality of spaced apart finger members connected to said frame member, said gate unit adapted to pivot to an open position at an angle to the end plane of a tile, and to a closed position adjacent the end of a tile, said fingers having a length sufficient to extend substantially across the open end of a tile, and wherein a lock means is provided which is connected to said gate unit at a point remotely located from said arm and is connected to said clamp member to maintain said gate unit in said closed position.
8. A gate assembly for drainage tiles, comprising, a cylindrical clamp member adapted to embrace a cylindrical tile, an arm pivotally connected to said clamp member, a gate unit having a frame member connected to said arm, at a point spaced from said pivotal connection to said clamp member, and a plurality of spaced apart finger members connected to said frame member, said gate unit adapted to pivot to an open position at an angle to the end plane of a tile, and to a closed position adjacent the end of a tile, said fingers having a length sufficient to extend substantially across the open end of a tile, and a disc plate and a clamp means for detachably securing the disc plate to said finger members of the frame of said gate unit and said disc plate being adapted to close the end opening of a tile.

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