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Erickson et al.

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[54] **SLOTTED DRAINAGE CONDUIT AND INTEGRAL CONCRETE FLOOR**

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[51] **Int. Cl.**[2] **E02B 11/00;** E04B 1/345

[58] **Field of Search** 52/169, 2, 577; 61/11, 61/72.2; 264/32–35

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Attorney, Agent, or Firm—Townsend and Townsend

[57] **ABSTRACT**

An improved method for cast-in-place construction of a concrete drainage conduit immediately below an integral concrete floor surface, including a longitudinal slot for discharge of surface fluids into said conduit. A water-inflated, fabric-reinforced plastic tubular form and longitudinal slot-forming inserts, used during the concrete pouring operations, are later retrieved at one end of the conduit for reuse following deflation of the tubular form. Conduits of non-circular cross section may be formed if desired. This improved method is useful for construction of drainage facilities for flushable slotted floors for cattle confinement feedlots and for other paved surfaces such as auto parking areas, roadways and airports.

24 Claims, 5 Drawing Figures

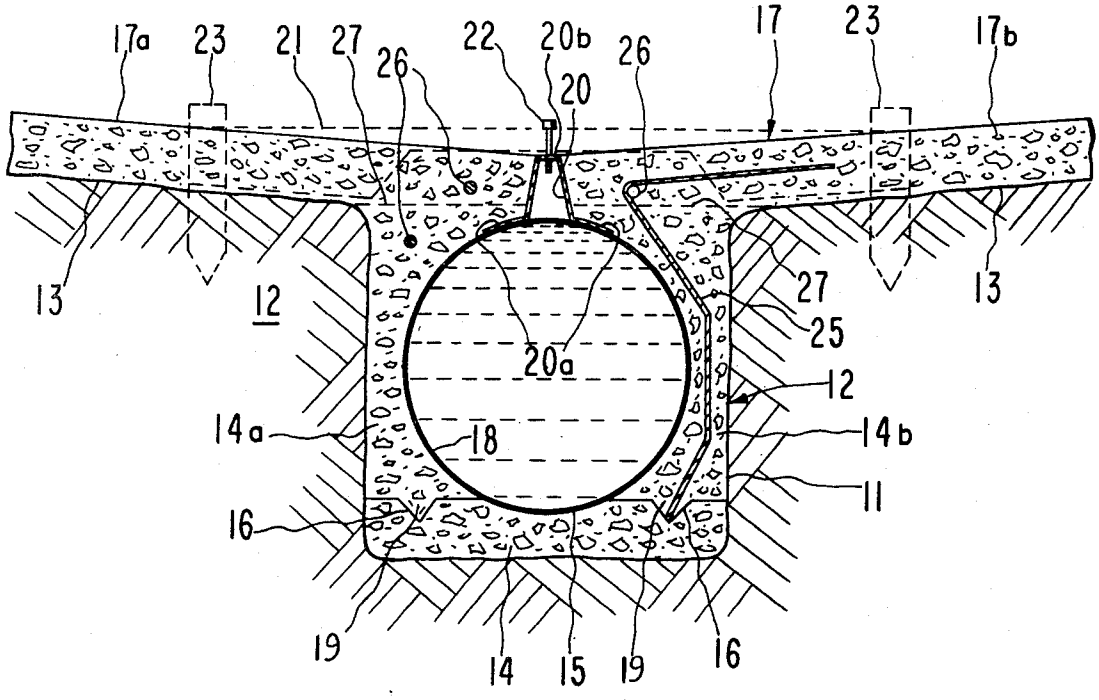


FIG. 1

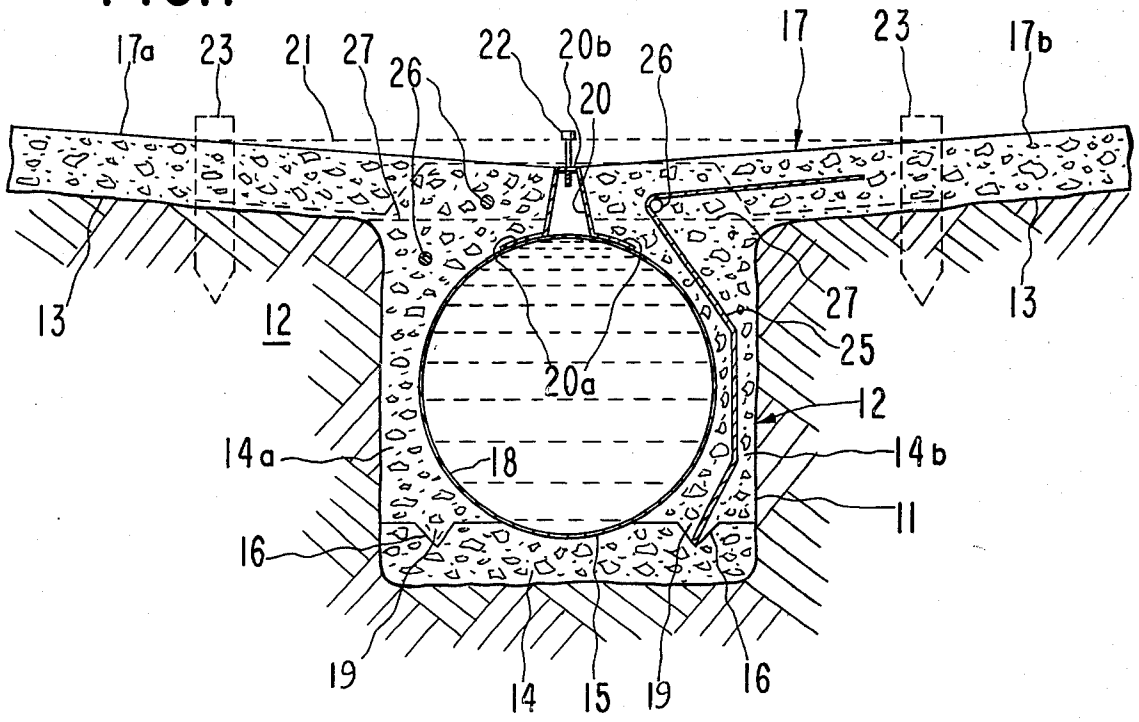

17a
23
21
27
26
22
20b
20
26
17
23
17b
13
12
27
25
20a
12
14a
18
14b
11
16
19
14
15
19
16

FIG. 2

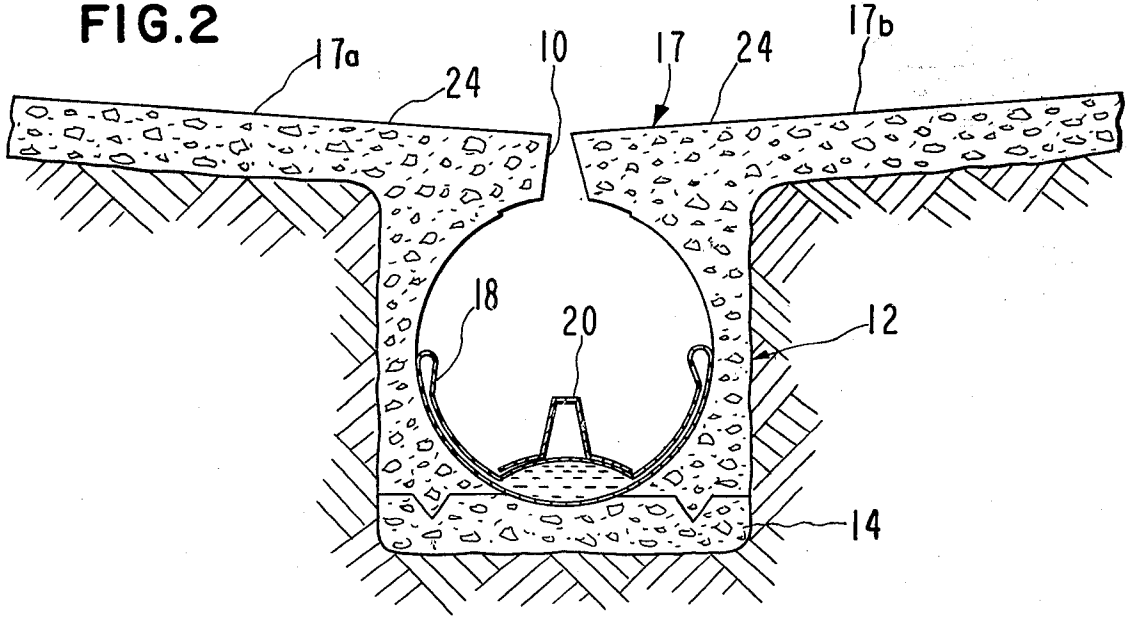

17a
24
10
17
24
17b
18
20
12
14

FIG. 3

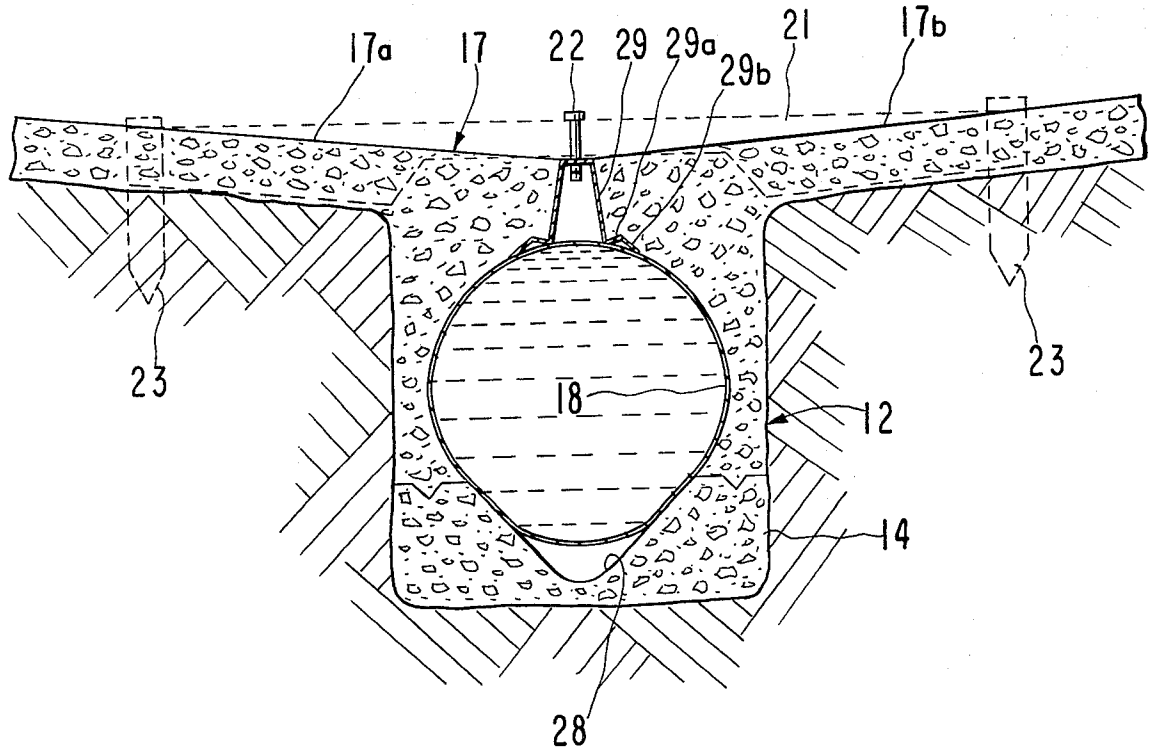
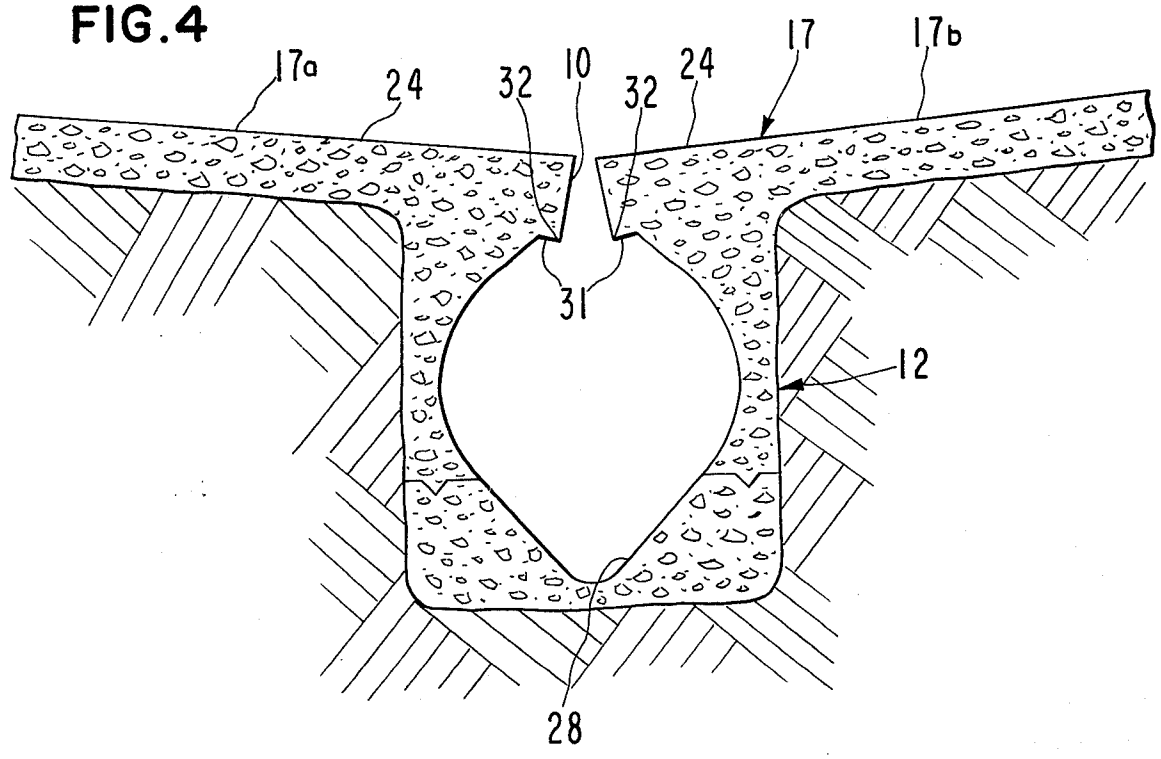

17a
17
22
29
29a
29b
21
17b
23
23
18
12
14
28

FIG. 4


17a
24
32
10
32
24
17
17b
31
12
28

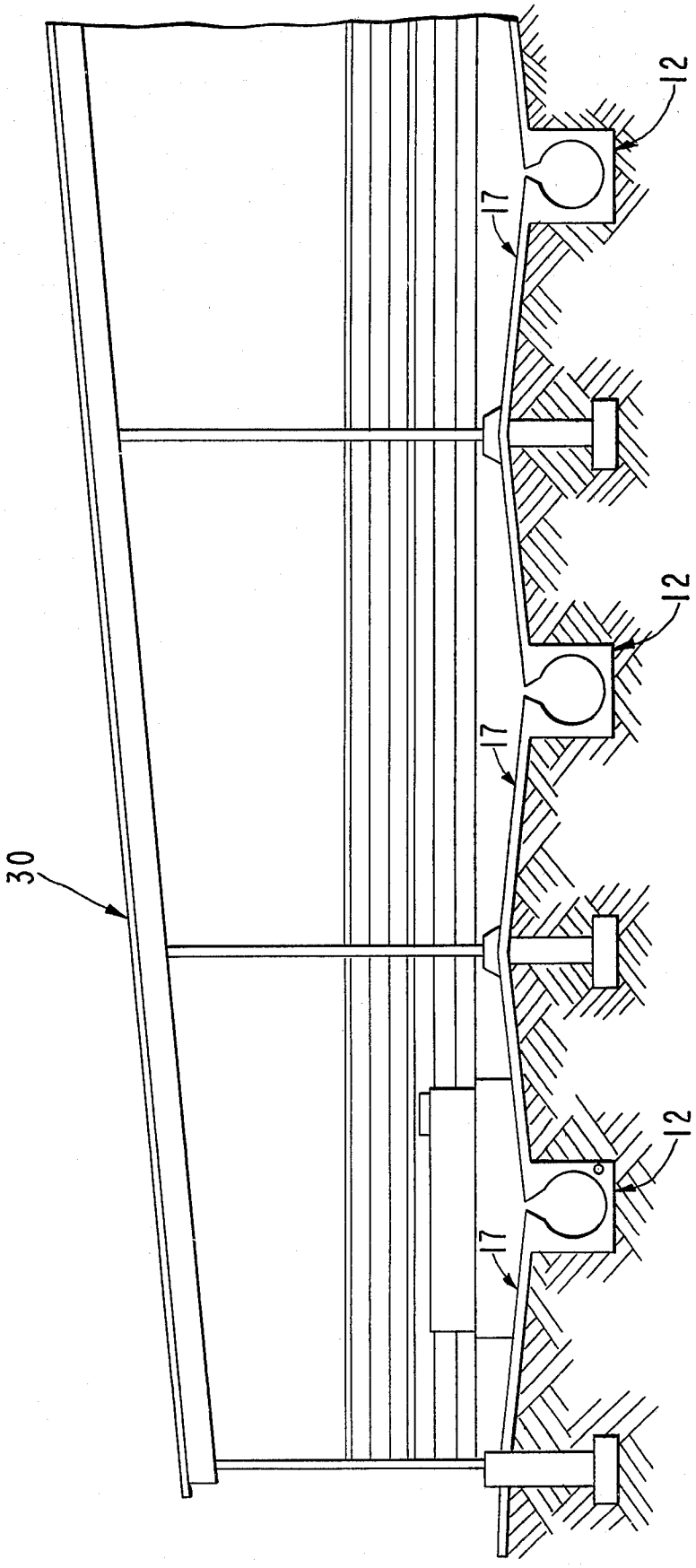


FIG.5

SLOTTED DRAINAGE CONDUIT AND INTEGRAL CONCRETE FLOOR

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to an improved method for construction of a concrete floor with drainage slots opening into integral subfloor drainage conduits.

Description of the Prior Art

Slotted subsurface drainpipes for removal of water from paved parking lots, roadway areas and the like are well-known in the art. Such structure is typified by the Armco Slotted Drain product of Armco Steel Company, fabricated at Davis, Cali. It consists of interconnected sections of corrugated galvanized pipe in which two parallel spaced 3/16 ×2½ steel plates are welded into a longitudinal slot cut into the pipe and retained in spaced, parallel relationship by numerous steel reinforcing crossbars. These prefabricated slotted steel pipes are placed in a ditch and are permanently embedded in concrete or other material used for construction of a paved surface area above the pipe. Costs for such construction are substantial as current prices for such prefabricated slotted steel pipe are $674 to $854 per 100 feet for 12-inch and 24-inch diameters, respectively, FOB the factory. The metal materials buried underground in such construction are currently in short supply and have been increasing substantially in cost in recent years. Steel materials are subject to eventual deterioration in use, particularly where manure waste products or other corrosive fluids are to be handled.

Slotted subfloor conduits are used in the improved feedlot floor described in a U.S. patent application of Ralph Kissinger, Jr., filed Aug. 3, 1973, Ser. No. 385,621, entitled, "SANITARY FLUSHIBLE FLOOR FOR CATTLE Confinement Feedlots", in which an undivided interest is assigned to Lennart G. Erickson. A construction method developed by Ralph Kissinger and his associates involves installation in a trench, upon a concrete base, of a water-filled plastic pipe, usually 12 inches in diameter, upon the top of which is cemented a longitudinal slotform of polyurethane foam. The trench is back-filled with concrete and the integral, sloped floor slab is finished to conform to the top of the slotform attachments. Subsequently, the polyurethane foam is partially dissolved with the aid of a chemical solvent, and a saw is used to cut a slot through the plastic pipe, thus completing the floor slot opening into the subfloor pipe conduit. Costs for suitable plastic pipes for this method currently are $250 per 100 feet for 12-inch PVC (polyvinyl chloride) pipe and $1,050 per 100 feet for 22-inch diameter fibreglass pipe. The petroleum-base plastic materials used in fabrication of such pipes and the slotforms are currently in short supply and costs have been increasing rapidly in recent years.

In use, difficulties have been experienced due to separation of the slotted plastic pipe from its concrete enclosure. This is apparently due to repetitive stresses caused by temperature and moisture variations and is further complicated by manure accumulation and bacterial growth within the crevasses thus created in the interior walls of the slotted conduit.

A precast reinforced concrete slotted conduit has been invented by Robert Mensch, Fairmont, Minn. (patent applied for) and is currently produced by Winnebago Concrete Products Co., Winnebago, Minn.

Such construction involves a precast, U-shaped member for the bottom half of the conduit, upon which is placed an interlocking precast member including a longitudinal slot reinforced by metal crossbars. Current costs are $550 per 100 lineal feet, FOB the factory, for 8½-inch equivalent conduit diameter assemblies weighing 11,400 lbs. per 100 feet. Freight costs preclude use of such present slotted conduits for installations distant from fabrication plants, particularly for larger-sized conduits.

SUMMARY OF THE INVENTION AND OBJECTS

A primary object of the present invention is to provide a method for the relatively low-cost construction of integral, cast-in-place slotted concrete floor and subfloor drainage conduits.

An object of this invention is to provide a method for construction of slotted drainage conduits well-suited for use in the above-mentioned patent application of Ralph Kissinger, Jr. for an improved Sanitary Flushible Floor for Cattle Confinement Feedlots.

An object of this invention is to provide a monolithic concrete floor with longitudinal slots for improved sheet flow discharge of surface waters into integral subfloor drainage conduits.

An object of this invention is to provide a method for making a slotted concrete floor and subfloor drainage channels in which all surfaces are continuous and free of structural interfaces of dissimilar materials which may provide openings for penetration by fluids, solids and bacteria.

An object of this invention is to provide a method for construction of subfloor drainage conduits, substantially "heart-shaped" in cross section, particularly suitable in cattle feedlot installations for hydraulic flushing of manure and to minimize manure accumulation upon the sidewalls of such conduits.

An object of this invention is to provide a method of the type described wherein the forms used to construct the conduit can be reused after they have served their initial purpose during placement and hardening of the concrete construction materials employed.

An object of this invention is to provide a method for the poured-in-place construction of a slotted concrete floor and subfloor drainage channels in which the principal construction material used is concrete, a universal low-cost construction material usually available from local supply anywhere in the world.

These and other features and objects of the invention will become apparent from the following description when taken in conjunction with the accompanying drawings.

IN THE DRAWINGS:

FIG. 1 is a cross-sectional view of a round-shaped concrete drainage conduit with water inflated tubeform and slotform inserts in position for placement of concrete;

FIG. 2 is a subsequent cross-sectional view with the tubeform deflated and slotform insert displaced to positions ready for removal from an open end of the completed slotted floor drainage conduit;

FIG. 3 is a cross-sectional view of a slotted floor drainage conduit with water inflated tubeform displaced in cross-sectional shape so as to form a heart-shaped conduit;

FIG. 4 is a cross-sectional view of a finished heart-shaped slotted floor drainage conduit; and

FIG. 5 is a front elevational view of a portion of an animal feedlot utilizing the subfloor conduit and floor of this invention.

The present invention is directed to a method for forming a slotted conduit **12** of concrete which is formed in place in an open trench **11** in the ground, the trench being preferably compacted and the upper surface **13** of the ground on opposite sides of the trench being prepared to a predetermined surface grade as shown in FIGS. **1** and **2.** Conduit **12** is comprised of a base **14** and a pair of opposed sides **14***a* and **14***b*. The base has a central, arcuate recess **15** and a pair of interlocking grooves **16** on opposite sides of recess **15.** Sides **14***a* and **14***b* have projections **19** which fit into and interlock within grooves **16** to couple the base and sides together. A floor **17** sloped to the desired grade is formed after conduit **12** is formed, the floor having sides **17***a* and **17***b* which are disposed on opposed sides of a central slot **10** and sloped toward the same. The slot is formed at the upper end of conduit **12** and communicates therewith so that liquids and other flowable masses on the upper surface of floor **17** can flow toward and into conduit **12** through slot **10.**

Lateral reinforcing bars **25** and longitudinal reinforcing bars **26** can be used at various locations in conduit **12** and floor **17** to increase the strength thereof. Such strength is oftentimes necessary to carry heavy vehicular traffic on floor **17.** However, such bars may be omitted in cattle feedlot floor applications, if desired.

Conduit **12** may be of any suitable length. For cattle feedlot applications, it may be of the order of **1,200** feet or more. Moreover, conduit **12** and floor **17** can be poured in sections, such as **660**-foot lengths, as will hereinafter be described.

In carrying out the process of forming conduit **12,** base **14** is initially poured in trench **11** and the base has a particular grade to assure proper flow of foreign matter from one end of the conduit to the opposite end during a flushing operation. The concrete in base **14** is then allowed to set to a hardened condition, following which a flexible, collapsible tube **18** is placed in the ditch and filled with water to inflate the same until the water is at a pressure of about **3** lbs. per square inch. The tube is cylindrical in shape, and, when filled with water, is seated in recess **15** and extends along the same, whereby the tube is essentially centered between the sides of the trench so that the concrete can be poured in the trench surrounding the tube so as to form sides **14***a* and **14***b*. Water is used to provide the weight and stability necessary to prevent floating of tube **18** when trench **11** is back-filled with concrete. The tube may be of any length. A length of **660** feet or more has been found to be practical and most economical for large projects.

Before concrete is poured about tube **18,** a metal slotform **20** is placed on top of the tube and is held in place by any suitable means, such as by spaced cross supports **21** which carry bolts **22** threaded into slotform **20,** the latter having a pair of sides flanges **20***a* which rest on the upper surface of inflated tube **18.** Bolts **22** are threaded into a top stretch **20***b* of slotform **20.** Supports **21** are secured at their ends to stakes **23** driven into the ground as shown in FIG. **1.**

Sides **14***a* and **14***b* of conduit **12** are then formed by pouring concrete around tube **18** to a level approximating dashed line **27** (FIG. **1**). The concrete is poured slowly to allow it to partially set as the pouring operation progresses to avoid floatation of tube **18.** As sides **14***a* and **14***b* are poured, the projections on the lower portion of the sides are also formed and interlock with grooves **16.** If necessary, a positive moisture seal may be achieved by placing an epoxy cement in grooves **16** just prior to the pouring of sides **14***a* and **14***b*.

After the concrete forming sides **14***a* and **14***b* has set to a hardened condition, supports **21** and stakes **23** can be removed and additional concrete is poured to form floor **17** to the proper grade. In this operation, top **20***b* of slotform **20** is used as a guide for a screed for accuracy in finishing of the upper surface **24** of floor **17.** The floor sections **17***a* and **17***b* slope downwardly toward top **20***b* as shown in FIG. **1.**

After floor **17** has been poured and the concrete thereof has set to a hardened condition, water in tube **18** is removed therefrom either by draining or by pumping. The tube will then collapse due to its collapsible nature (FIG. **2**) although some of the water may partially remain in the bottom of the tube. Slotform **20** is then forced inwardly, such as by pounding it with a mallet, and the slotform is caused to fall onto the deflated tube **18,** thereby exposing slot **10** whose opposed inner surfaces converge toward each other as they approach the upper surface **24** of floor **17.**

When the slotform is forced into the conduit, it rests on tube **18** so that both can be pulled together out of the conduit at one end thereof. Thus, the tube and the slotform can then be reused for forming an additional length of conduit **12** connected to the first-formed length of it. Prior to each use, tube **18** and slotform **20** may be spray-coated with a lubricating fluid to facilitate surface release and withdrawal from the finished concrete conduit **12.**

Before pulling tube **18** and slotform **20** out of a freshly formed conduit **12,** base **14** of the next adjacent conduit section is formed in the manner described above. Then, the tube and slotform are pulled into a position overlying the adjacent base **14** with a portion of tube **18** remaining in the first conduit for assuring continuity of the two adjacent lengths of the conduit. Then, tube **18** is inflated and slotform **20** is positioned as shown in FIG. **1** to prepare for the formation of sides **14***a* and **14***b* of the second length of the conduit.

FIGS. **3** and **4** illustrate another embodiment of the conduit wherein base **14** has a central recess or indentation **28** which is substantially V-shaped in configuration. The recess has a lowermost, transversely concave central portion. Moreover, a slotform **29** is used which has a pair of sides flanges which are in line contact with tube **18** rather than in surface contact as shown in FIG. **1.** To this end, each flange of slotform **29** has a pair of angularly disposed segments **29***a* and **29***b* which converge toward each other as they extend away from tube **18.** Slotform **29** is held in place by bolts **22** as described above with respect to FIG. **1.**

Base **14** and sides **14***a* and **14***b* of the configuration of FIG. **3** are formed in the same manner as described above with respect to FIG. **1.** However, tube **18** assumes a substantially pear-shaped configuration due to the substantially V-shape of recess **28.** The finished conduit, after tube **18** and slotform **29** have been removed therefrom, is shown in FIG. **4** and the inner surface of the conduit is pear-shaped, a particularly useful shape in flushing liquid manure from one end of the

conduit to the opposite end. Moreover, the shapes of the flanges of slotform **29** cause the formation of reverse surfaces **31** immediately inside slot **10** and these surfaces extend upwardly and away from the slot to form drain points **32** from which liquid manure will gravitate into the V-shaped bottom of the conduit. Thus, accumulations of manure on the upper portions of the inner surface of the conduit will not occur.

In using either configuration of conduit **12**, the conduit may become half to two-thirds full of liquid manure between flushing operations. When flushing water is introduced into the conduit, the flushing water eventually reaches an average depth of about two inches on top of the manure accumulation in the conduit and a flow velocity of about 2½ feet per second before the flushing action is started. If the flushing water cuts a channel in the manure deposit, the manure accumulations along the sidewalls of the channel will tend to cave in and to slide down in the conduits, especially if the conduit has the relatively steep sidewalls shown in FIG. **4**. As the flushing operation nears completion, the waterflow velocity and water depth will decrease substantially due to the contraction of the conduit width at the low point. Thus, a more efficient flushing action is accomplished with the configuration of FIGS. **3** and **4** than is possible with the configuration of FIGS. **1** and **2** since some of the heavy solids remain in the relatively flat bottom of conduit **12** having the FIG. **1** configuration.

The improved method of this invention may be advantageously employed in the construction of floors for confinement feeding of cattle, including floors designed according to the principles described in the previously-mentioned patent application of Ralph Kissinger, Jr. for an Improved Sanitary Flushible Floor for Cattle Confinement Feedlots.

The improved method of this invention may be advantageously employed in the construction of slot-drained paved surfaces for auto parking areas, roadways, airport runways and the like, as is well-known in the art. In these applications, surface drainage discharge into long slots has been found to be more efficient and less costly the the now commonly used construction involving collection and concentration of waterflow by means of curbs and gutters or ditches leading to collection basins discharging into subsurface drainpipes. For use in asphaltic paved areas, the concrete floor surface **24** of the slotted concrete drainage conduit may extend only about **18** inches each side of the slot to junction with the extended asphaltic paved areas.

Thus, according to the teachings of our invention, an improved method has been described for relatively low-cost construction of an improved slotted drainage conduit and integral concrete floor. FIG. **5** shows a portion of an animal feedlot housing **30** utilizing a number of conduits **12** and floors **17** made in accordance with the present invention.

While we have described and illustrated a specific embodiment of our invention, it will be clear that variations of the details of construction which are specifically illustrated and described may be resorted to without departing from the free spirit and scope of the invention as defined in the appended claims.

We claim

1. A method of forming a slotted drainage conduit comprising: forming a trench in the ground; laying a concrete base in the bottom of the trench; placing an inflatable tube on said base; inflating the tube, the transverse dimension of the tube when inflated being less than the width of the trench; holding the tube against substantial lateral movement on the base when the tube is inflated; pouring concrete in the trench onto the base and about and along the tube when the latter is inflated and held on said base; maintaining a region extending upwardly from the tube free of concrete as concrete is poured about the tube; allowing the concrete about the tube to set to a hardened condition to thereby form a conduit having a slot through said region; and deflating the tube and removing the same from the conduit.

2. A method as set forth in claim **1**, wherein the tube is removed from one end of the conduit.

3. A method as set forth in claim **1**, wherein said maintaining step includes blocking said region against the entrance of concrete thereinto, and including the step of unblocking said region after the conduit has been formed.

4. A method as set forth in claim **3**, wherein said blocking step includes placing a block in said region, said unblocking step including moving the block from said region into the conduit, and shifting the block out of the conduit through one end thereof.

5. A method as set forth in claim **1**, wherein said laying step includes forming an elongated recess in the base, said holding step including positioning the tube in the recess.

6. A method as set forth in claim **1**, wherein is included the step of laying a concrete floor above and on opposite sides of the conduit.

7. A method as set forth in claim **1**, wherein said inflating step includes filling the tube with water.

8. A method as set forth in claim **7**, wherein said inflating step includes keeping the fluid in the tube at a predetermined pressure.

9. A method of forming a concrete floor and a subfloor conduit for an animal feedlot comprising: forming a trench in the ground; pouring a first mass of concrete in the bottom of the trench to a first level spaced below the top of the trench; allowing the first mass of concrete to set to a hardened condition to form a base and tube-receiving recess in the base; placing an inflatable tube in the trench and on the base; inflating the tube, the sides of the tube being spaced from the sides of the trench; placing a block in a region above the tube when the latter is inflated with the region extending upwardly to a second level spaced above the top of the trench; pouring a second mass of concrete into the trench on opposed sides of the inflated tube and the block and onto the ground on opposite sides of the trench when the tube is inflated and over the recess with the upper surface of the concrete being substantially at said second level; permitting the second mass of concrete to set to a hardened condition to thereby form a subfloor conduit and a floor above and on opposed sides of the conduit; deflating the tube and removing the same from the conduit; and removing the block to present a slot extending between the conduit and the second level.

10. A method as set forth in claim **9**, wherein said inflating step includes filling the tube with water, and keeping the water at a predetermined pressure in the tube, said deflating and removing step includes causing the water to flow out of the tube and urging the tube out of the conduit through one end thereof.

11. A method as set forth in claim 9, wherein said block removing step includes forcing the block into the conduit, and moving the block out of the conduit through one end thereof.

12. A method as set forth in claim 9, wherein the step of pouring the second mass of concrete includes pouring a first portion of concrete into the trench on opposed sides of the tube and the block, and pouring a second portion of concrete above the first portion and onto the ground, said permitting step including allowing the first portion of concrete to set to a hardened condition before the second portion is poured thereon.

13. A method as set forth in claim 9, wherein said trench-forming step includes sloping the bottom of the trench so that the conduit will slope toward one end of the trench.

14. A method of forming a slotted drainage conduit comprising: forming a trench in the ground; laying a concrete base in the bottom of the trench and forming an elongated, concave recess in the base; placing an inflatable tube in the recess on said base; inflating the tube, said recess being substantially complemental to the lower margin of the tube when the latter is inflated, the transverse dimension of the tube when inflated being less than the width of the trench; pouring concrete in the trench onto the base and about the tube when the latter is inflated; maintaining a region extending upwardly from the tube free of concrete as concrete is poured about the tube; allowing the concrete about the tube to set to hardened condition to thereby form a conduit having a slot through said region; and deflating the tube and removing the same from the conduit.

15. A method of forming a slotted drainage conduit comprising: forming a trench in the ground; laying a concrete base in the bottom of the trench and forming an elongated, substantially V-shaped recess in the base; placing an inflatable tube in said recess on said base; inflating the tube, the transverse dimension of the tube when inflated being less than the width of the trench; pouring concrete in the trench onto the base and about the tube when the latter is inflated; maintaining a region extending upwardly from the tube free of concrete as concrete is poured about the tube; allowing the concrete about the tube to set to a hardened condition to thereby form a conduit having a slot through said region, the recess providing a relatively steep slope for the bottom portion of the conduit; and deflating the tube and removing the same from the conduit.

16. A method of forming a slotted drainage conduit comprising: forming a trench in the ground; laying a concrete base in the bottom of the trench; placing an inflatable tube on said base; inflating the tube as it is supported on the base with the transverse dimension of the inflated tube being less than the width of the trench; pouring concrete in the trench onto the base and about the inflated tube; maintaining a region extending upwardly from the tube free of concrete as concrete is poured about the tube; allowing the concrete about the tube to set a hardened condition to thereby form a conduit having a slot through said region; deflating the tube and removing the same from the conduit; directing a mass of concrete onto the ground above and on opposite sides of the conduit to form a floor; and sloping the upper surface of said mass downwardly toward said slot.

17. A method of forming a concrete floor and a subfloor conduit for an animal feedlot comprising: forming a trench in the ground; pouring a first mass of concrete in the bottom of the trench to a first level spaced below the top of the trench; allowing the first mass of concrete to set to a hardened condition to form a base and elongated, tube-receiving recess for said base with said recess being substantially V-shaped to present a pair of relatively angularly disposed surfaces converging toward each other as the bottom of the base is approached; placing an inflatable tube in the trench and on the base; inflating the tube, the sides of the tube being spaced from the sides of the trench when the tube is inflated; placing a block in a region above the tube when the latter is inflated with the region extending upwardly to a second level spaced above the top of the trench; pouring a second mass of concrete into the trench on opposed sides of the inflated tube and the block and onto the ground on opposite sides of the trench with the upper surface of the concrete being substantially at said second level; permitting the second mass of concrete to set to a hardened condition to thereby form a subfloor conduit and a floor above and on opposed sides of the conduit, deflating the tube and removing the same from the conduit; and removing the block to present a slot extending between the conduit and the second level.

18. A method of forming a concrete floor and a subfloor conduit for an animal feedlot comprising: forming a trench in the ground; pouring a first mass of concrete in the bottom of the trench to a first level spaced below the top of the trench; allowing the first mass of concrete to set to a hardened condition to form a base and an elongated, substantially concave tube-receiving recess for said base; placing an inflatable tube in the trench and on the base; inflating the tube, the tube being complementally received in the base when the tube is inflated, the sides of the tube being spaced from the sides of the trench when the tube is inflated; placing a block in a region above the tube when the latter is inflated with the region extending upwardly to a second level spaced above the top of the trench; pouring a second mass of concrete into the trench on opposed sides of the inflated tube and the block and onto the ground on opposite sides of the trench with the upper surface of the concrete being substantially at said second level; permitting the second mass of concrete to set to a hardened condition to thereby form a subfloor conduit and a floor above and on opposed sides of the conduit; deflating the tube and removing the same from the conduit; and removing the block to present a slot extending between the conduit and the second level.

19. A method of forming a concrete floor and a subfloor conduit for an animal feedlot comprising: forming a trench in the ground; pouring a first mass of concrete in the bottom of the trench to a first level spaced below the top of the trench; allowing the first mass of concrete to set to a hardened condition to form a base; placing an inflatable tube in the trench and on the base; inflating the tube, the sides of the tube being spaced from the sides of the trench when the tube is inflated with the region extending upwardly to a second level spaced above the top of the trench; pouring a second mass of concrete into the trench on opposed sides of the inflated tube and the block and onto the ground on opposite sides of the trench; sloping the upper surface of the second mass upwardly and away from the second level on opposed sides thereof; permitting the second mass of concrete to set to a hardened condition to

thereby form a subfloor conduit and a floor above and on opposed sides of the conduit; deflating the tube and removing the same from the conduit; and removing the block to present a slot extending between the conduit and the second level.

20. A method of forming a concrete floor and a subfloor conduit for an animal feedlot comprising: forming a trench in the ground; pouring a first mass of concrete in the bottom of the trench to a first level spaced below the top of the trench; allowing the first mass of concrete to set to a hardened condition to form a base; placing an inflatable tube in the trench and on the base; inflating the tube as it remains on the base with the sides of the tube being spaced from the sides of the trench; placing a block in a region above the inflated tube with the region extending upwardly to a second level spaced above the top of the trench; pouring a second mass of concrete into the trench on opposed sides of the tube and the block and onto the ground on opposite sides of the trench with the upper surface of the concrete being substantially at said second level; permitting the second mass of concrete to set to a hardened condition to thereby form a subfloor conduit and a floor above and on opposed sides of the conduit; deflating the tube and removing the same from the conduit; removing the block to present a slot extending between the conduit and the second level; forming a second trench coextensive with the first-mentioned trench; forming a concrete base in the second trench with the base in the second trench being coextensive with the base in the first-mentioned trench; moving the deflated tube end-wise of the conduit onto the second base; and repeating the inflating, block placing, second mass pouring, permitting, tube deflating and block-removing steps to form a second subfloor conduit and concrete floor coextensive with the first-mentioned subfloor and conduit and concrete floor.

21. A method as set forth in claim **20,** wherein said moving step includes keeping an end portion of the tube in the first conduit for alignment purposes.

22. A combination drainage conduit and floor for placement on the ground in an open trench comprising: a base having a concave recess in the upper surface thereof and adapted to be placed in the bottom of the trench; a pair of spaced sides having means integral with and interconnecting the upper margins thereof, the sides being positionable on the base and cooperating therewith to form the conduit; and a pair of floor members integral with respective sides at the upper margins thereof and extending laterally therefrom in opposed directions, there being a slot through the junction of the floor members and through said interconnecting means, the floor members being sloped toward said slot, whereby fluids on the upper surface of the floor members can gravitate to the slot and pass into the conduit.

23. A combination drainage conduit and floor for placement on the ground in an open trench comprising: a base having a V-shaped recess in the upper surface thereof and adapted to be placed in the bottom of the trench; a pair of spaced sides having means integral with and interconnecting the upper margins thereof, the sides being positionable on the base and cooperating therewith to form the conduit; and a pair of floor members integral with respective sides at upper margins thereof and extending laterally therefrom in opposed directions, there being a slot through the junction of the floor members and through said interconnecting means, the floor members being sloped toward said slot, whereby fluids on the upper surface of the floor members can gravitate to the slot and pass into the conduit.

24. A combination drainage conduit and floor for placement on the ground in an open trench comprising: a base adapted to be placed in the bottom of the trench; a pair of spaced sides having means integral with and interconnecting the upper margins thereof, the sides being positionable on the base and cooperating therewith to form the conduit; and a pair of floor members integral with respective sides at the upper margins thereof and extending laterally therefrom in opposed directions, there being a slot through the junction of the floor members and through said interconnecting means, the sides of the floor members defining the slot being convergent as their upper ends are approached, the floor members being sloped toward said slot, whereby fluids on the upper surface of the floor members can gravitate to the slot and pass into the conduit.

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