US 20070177942A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2007/0177942 A1

Meyers (43) Pub. Date: Aug. 2, 2007

(54) TRENCH PAN AND GRATE ASSEMBLY

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(21) Appl. No.: **11/344,391**

(22) Filed: **Jan. 31, 2006**

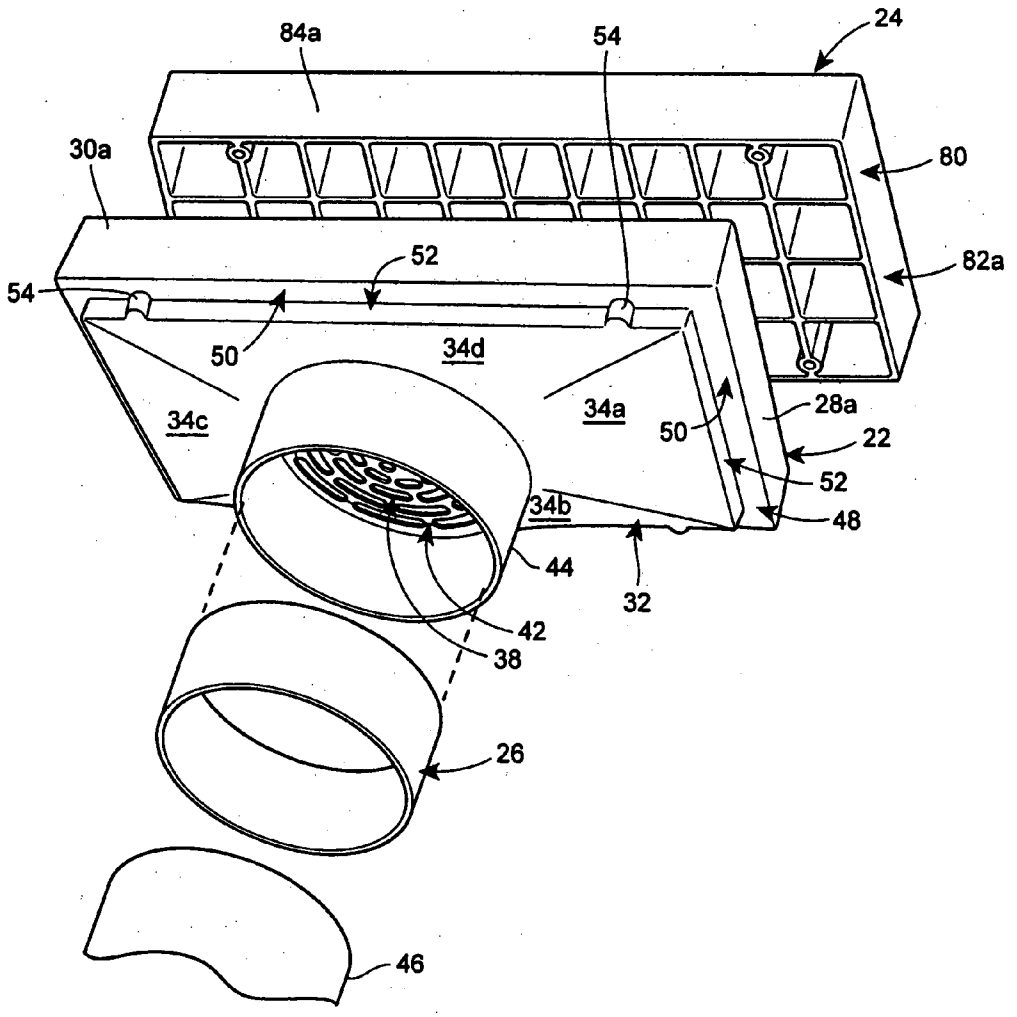
Publication Classification

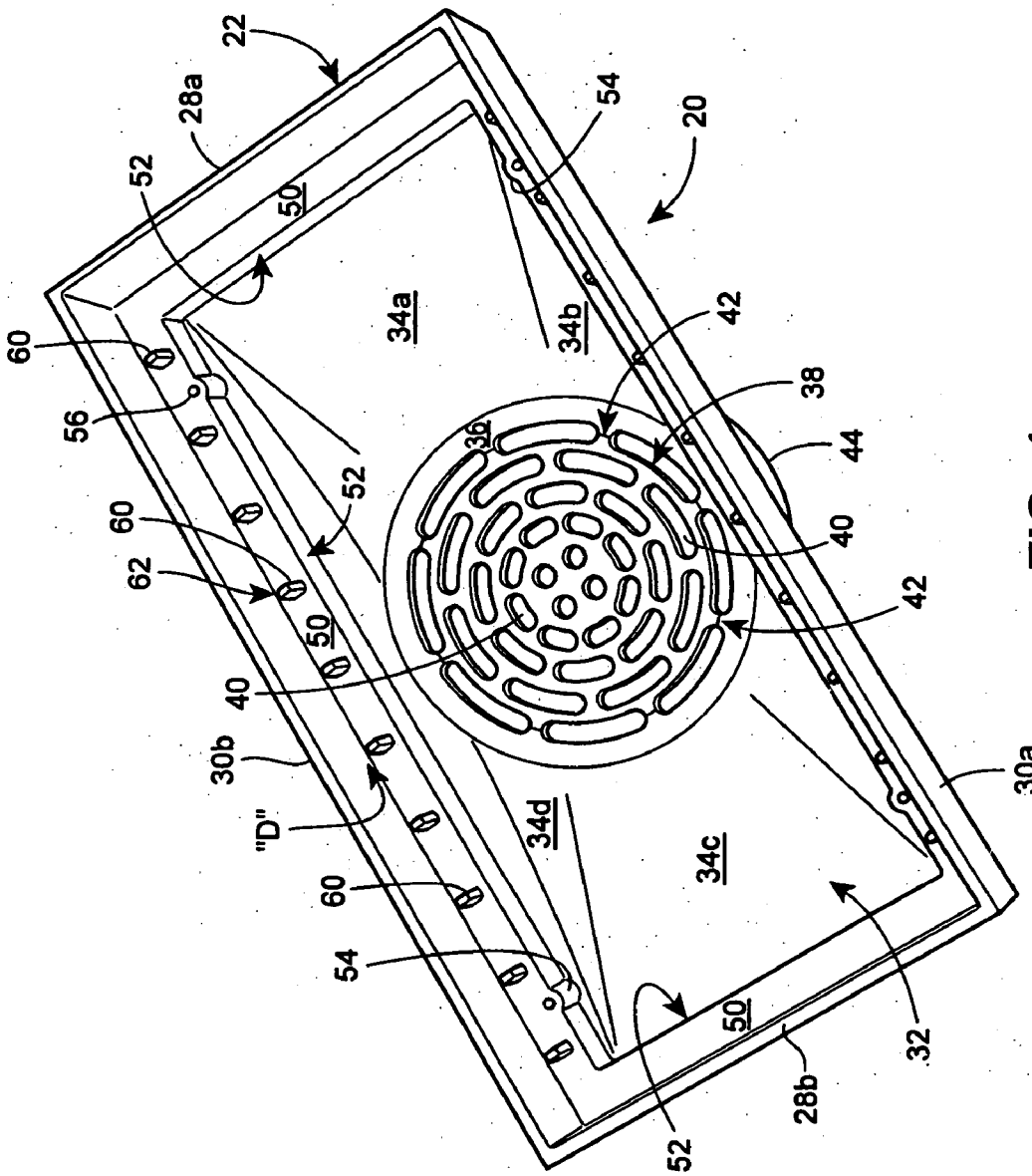
(51) **Int. Cl.**
E02B 13/00 (2006.01)

(52) **U.S. Cl.** **405/40**

(57) **ABSTRACT**

A trench pan and grate assembly generally rectangular in shape, having downwardly ramped transition bottom walls and an integrally-formed but removable strainer plate, terminating in a round pipe receiving fitting that is, through use of a bushing, able to accommodate the common different types of commercially-available plastic plumbing pipe of a given nominal size, and thus be connected to an underlying sloped main drainage pipe. The separate grate member is installed and fastened down, via threaded fasteners, to the trench pan to complete the assembly. This heavy duty grate is formed using gas-assist molding procedures with fractional-melt material (melt number<1.0). Individual assemblies can be formed end-to-end into an elongate trench drain system, with each assembly containing no standing effluent, and connected to different drainage pipes if desired. Assemblies can be solvent welded to drainage piping and thus require nothing to position and hold while the adjacent concrete is being cast.

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28a
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54
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34a
34b
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38
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36
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"D"
34d
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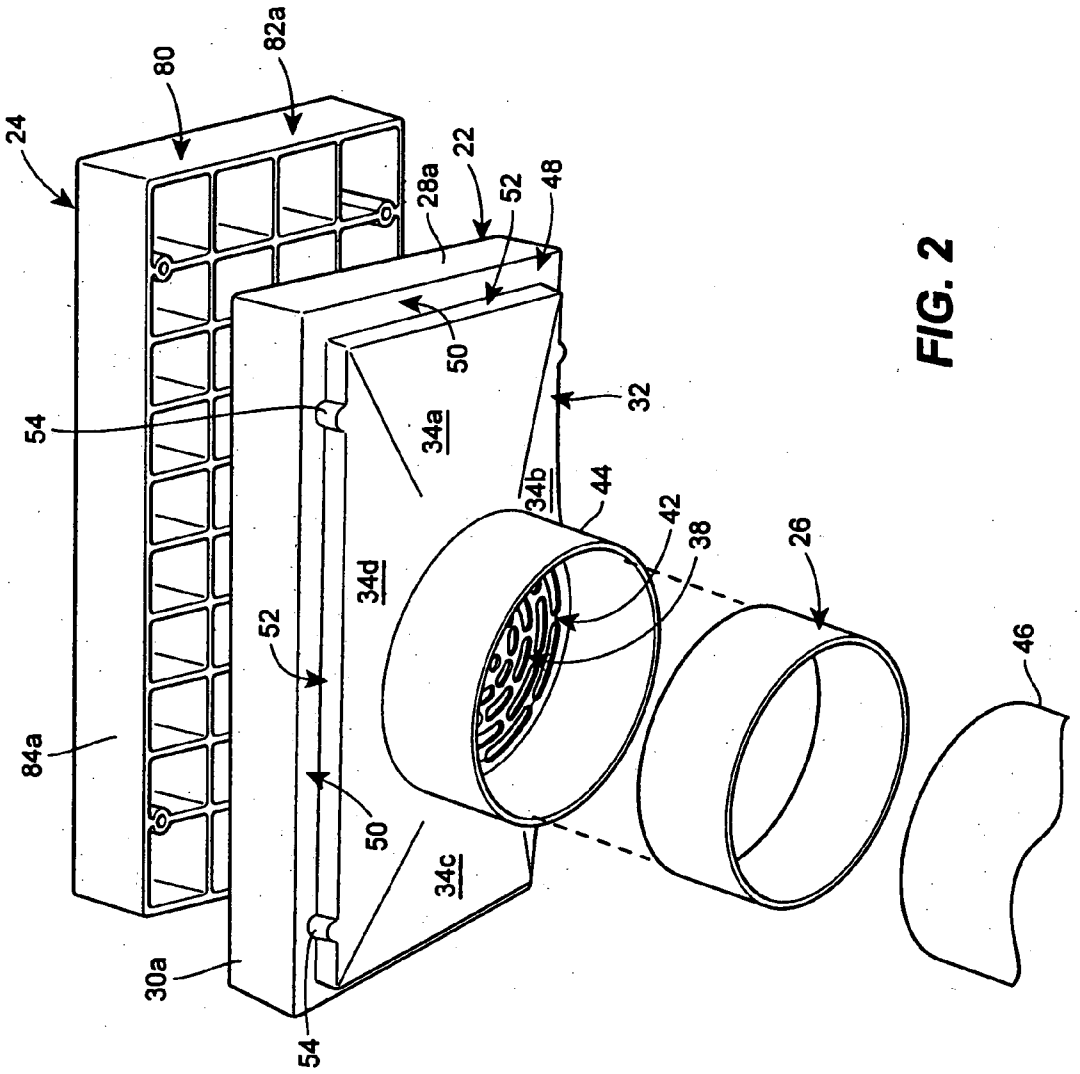
52

FIG. 1


24
80
82a
22
28a
52
48
50
32
54
34a
34b
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26
34d
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46
84a
50
34c
30a
54

FIG. 2

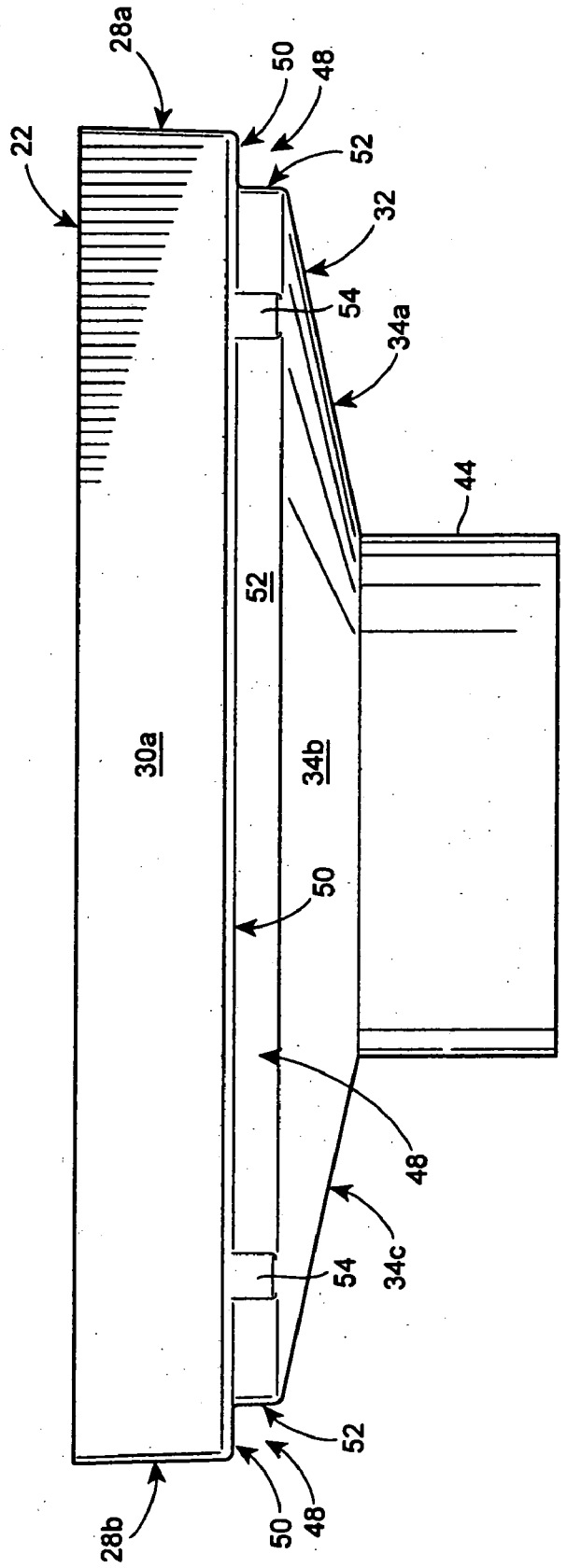


FIG. 3

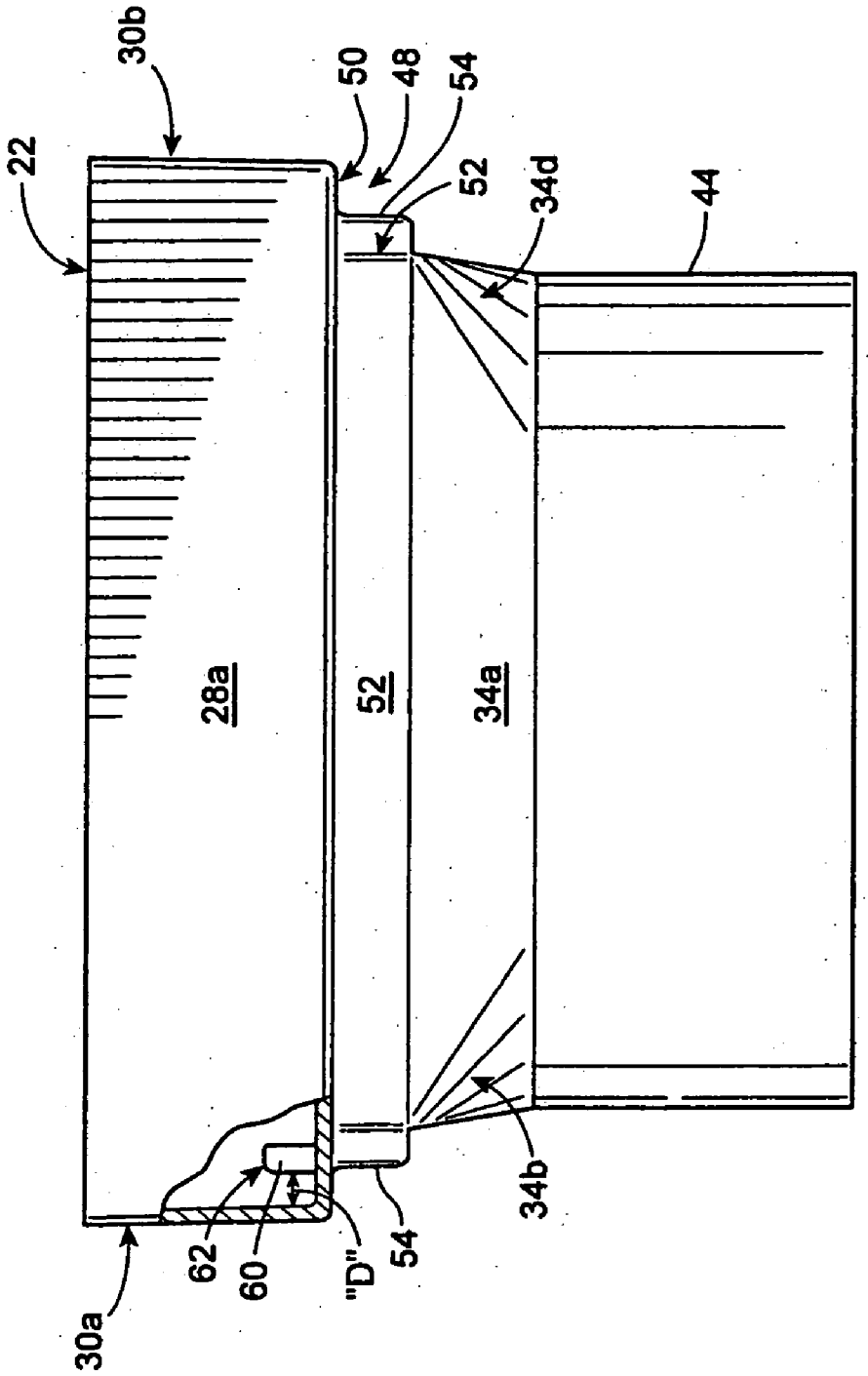


FIG. 4

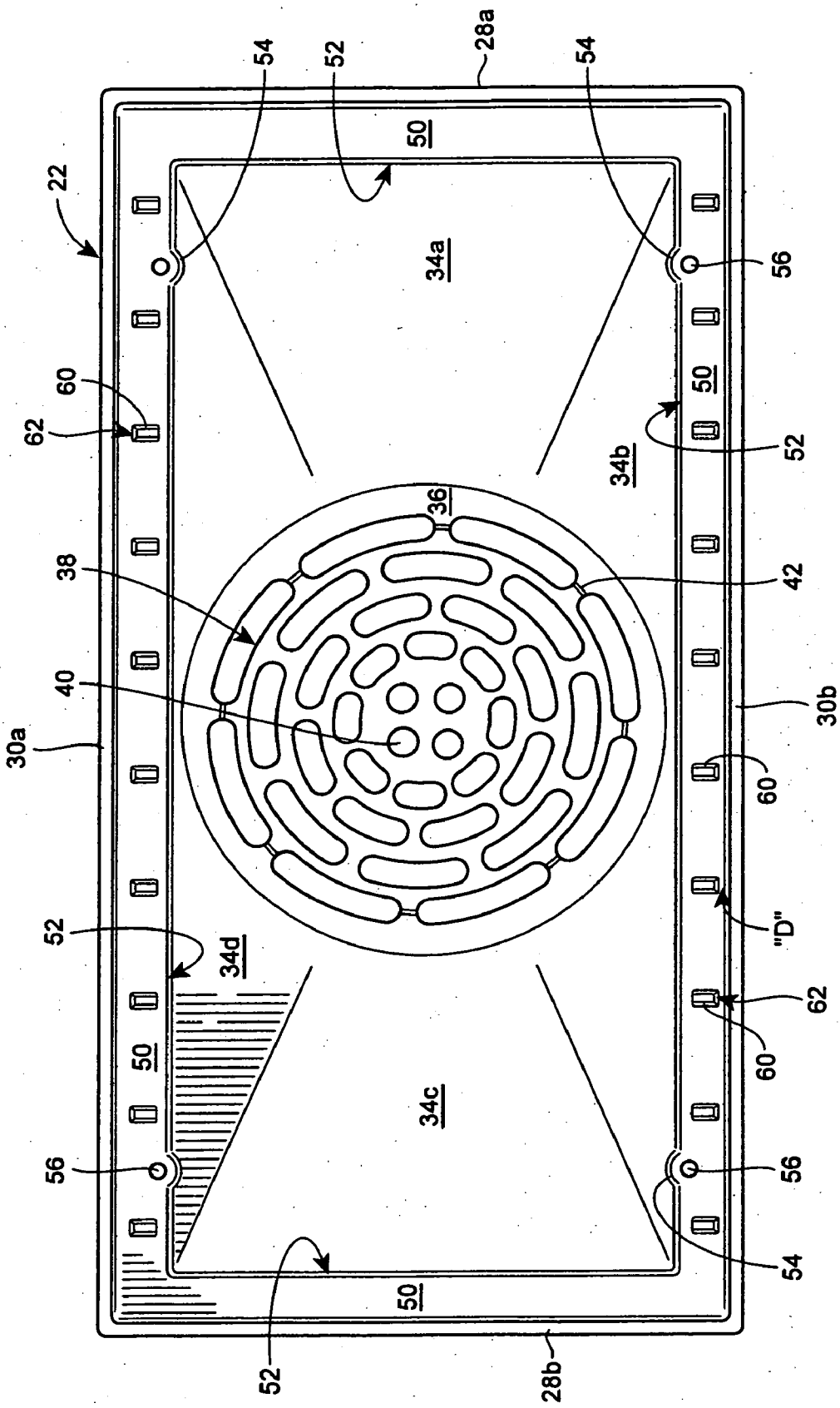
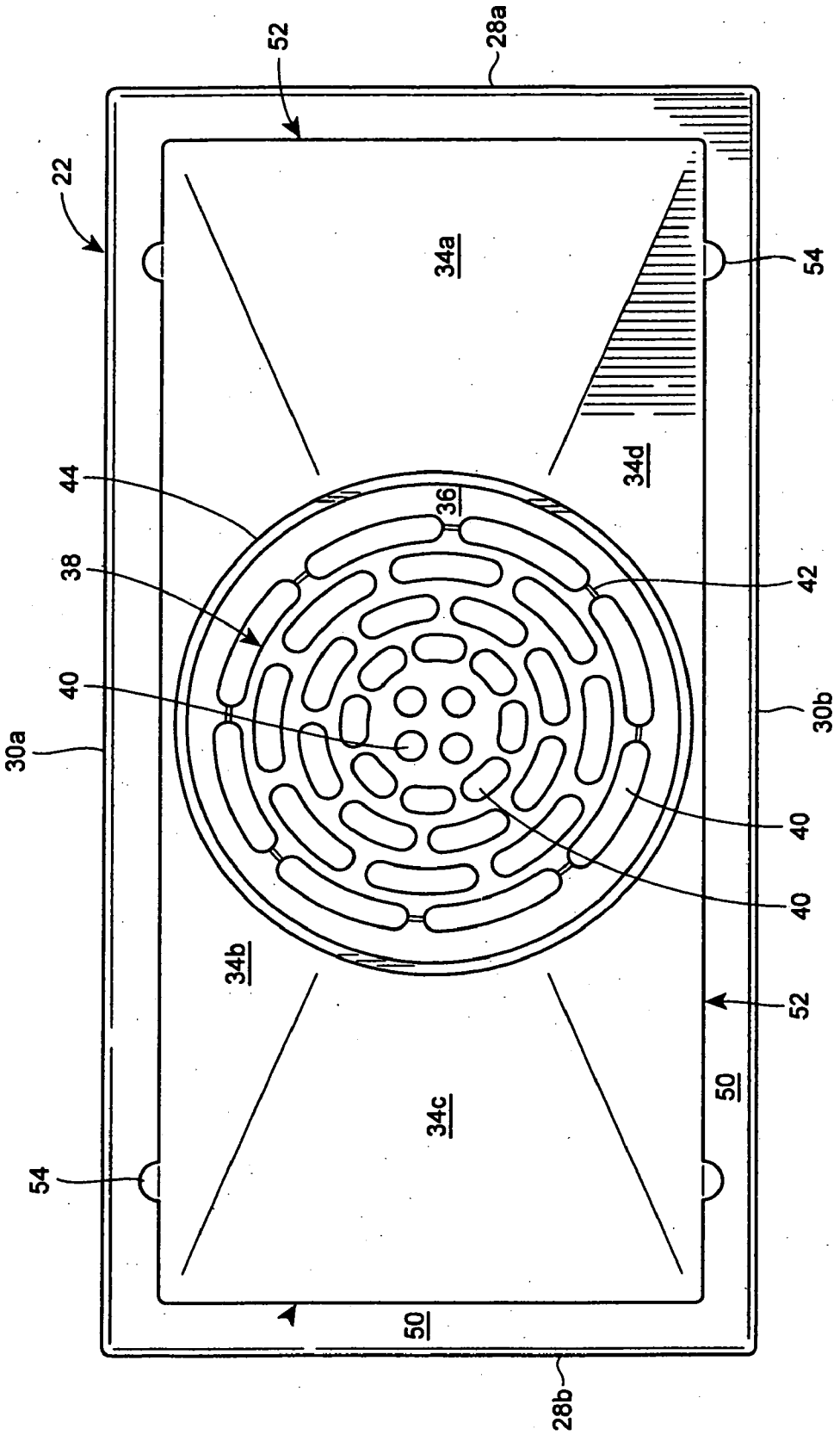


FIG. 5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34a
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34d
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34c
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FIG. 6

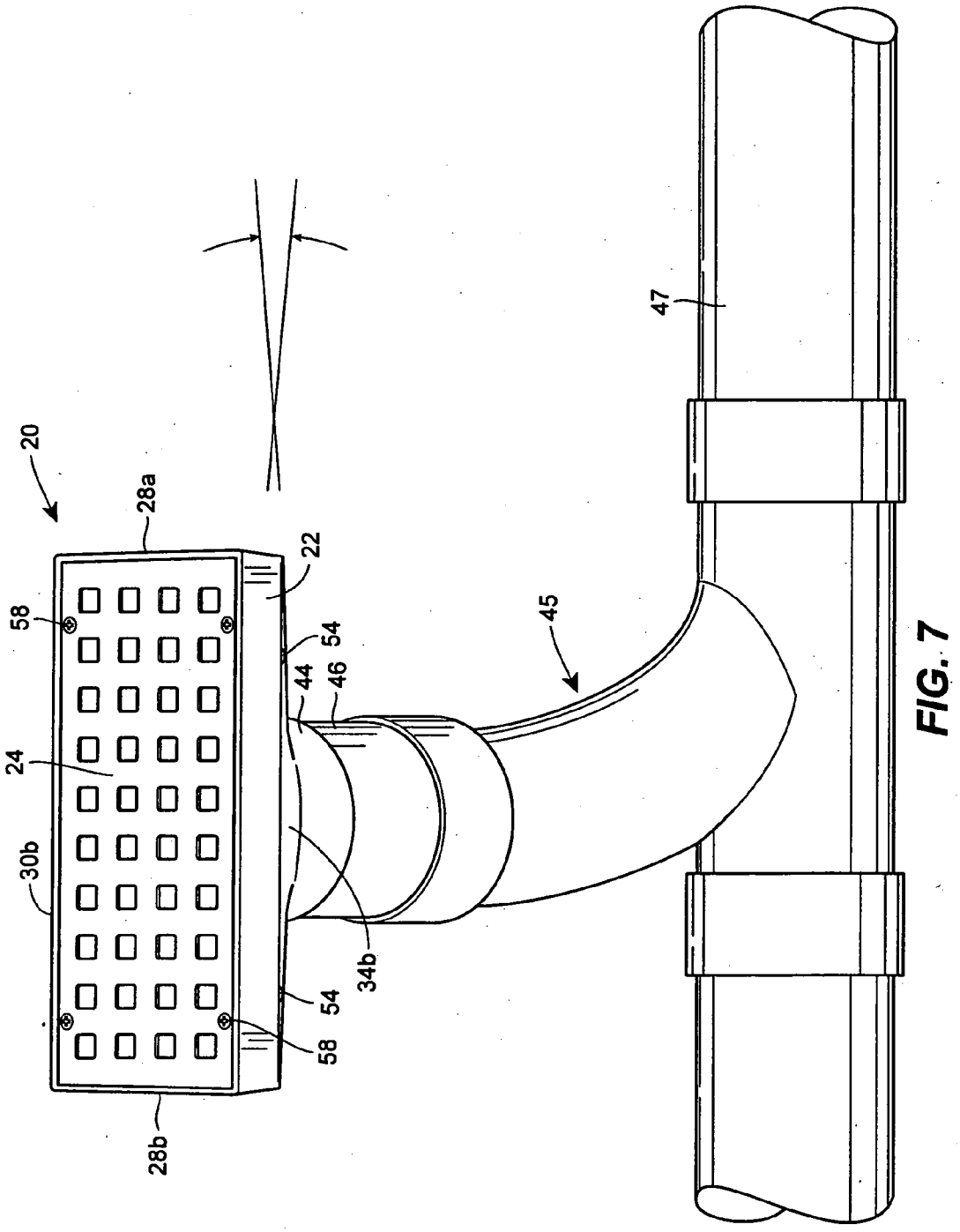


FIG. 7

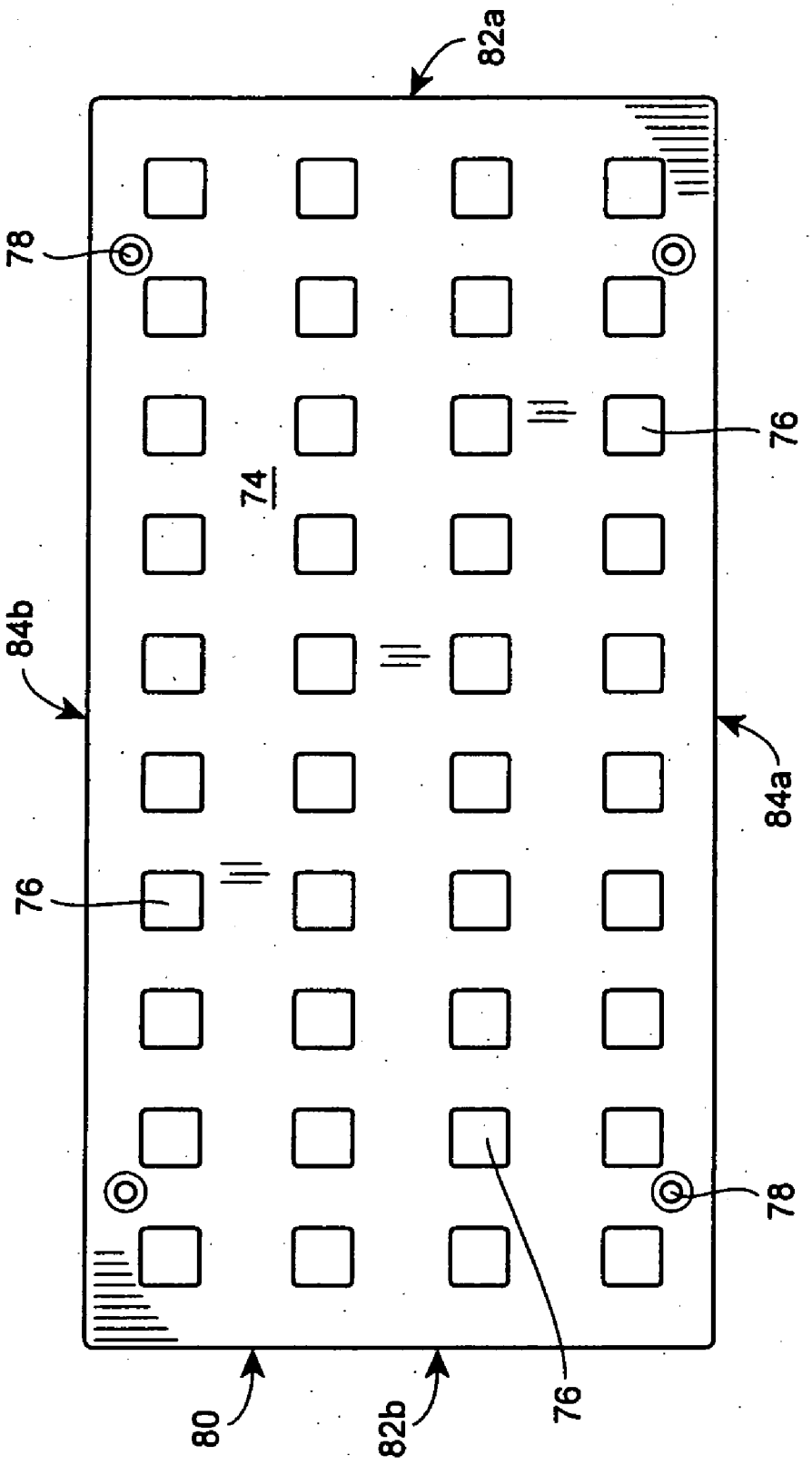
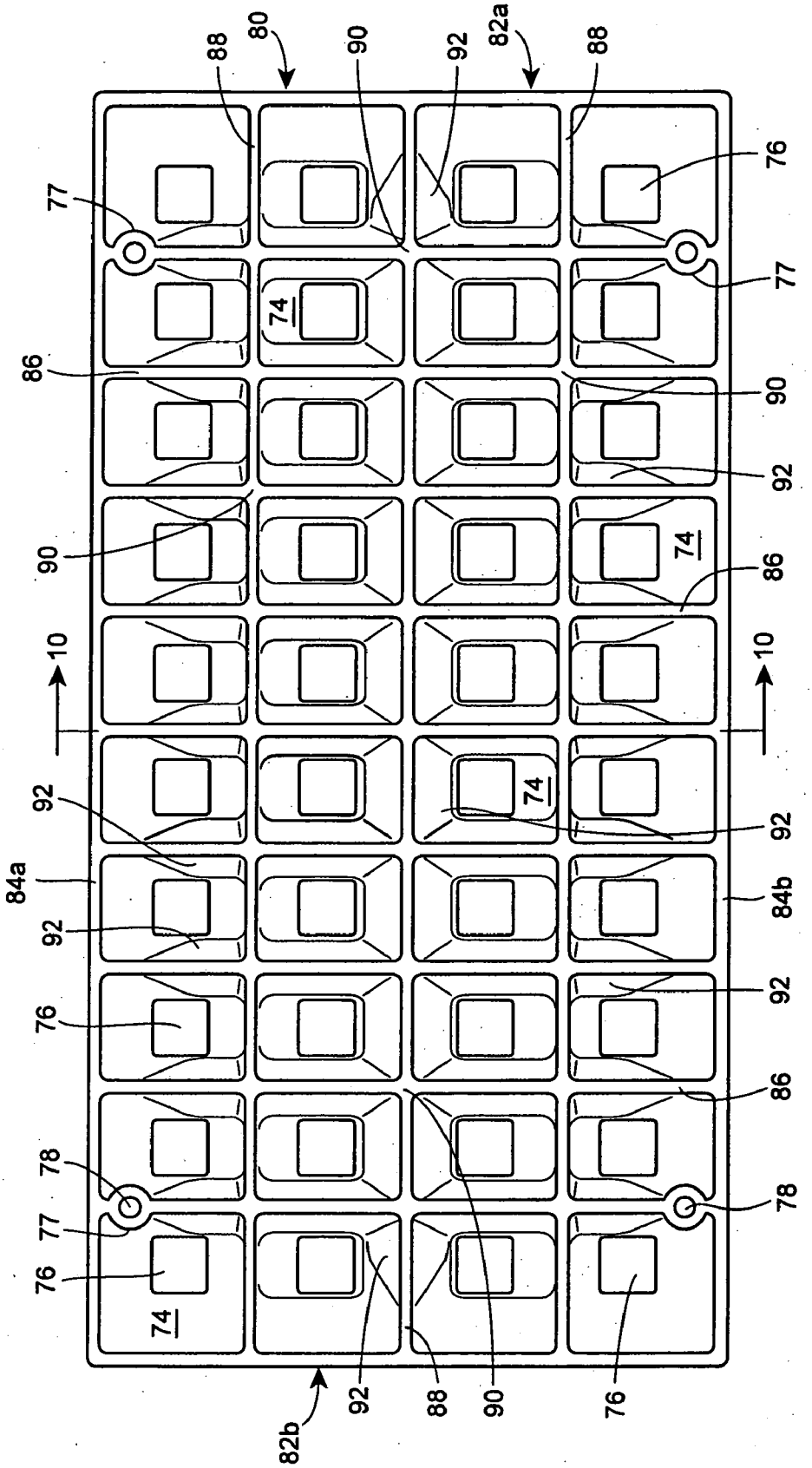


FIG. 8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82a
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84a
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84b
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90
76
82b

FIG. 9

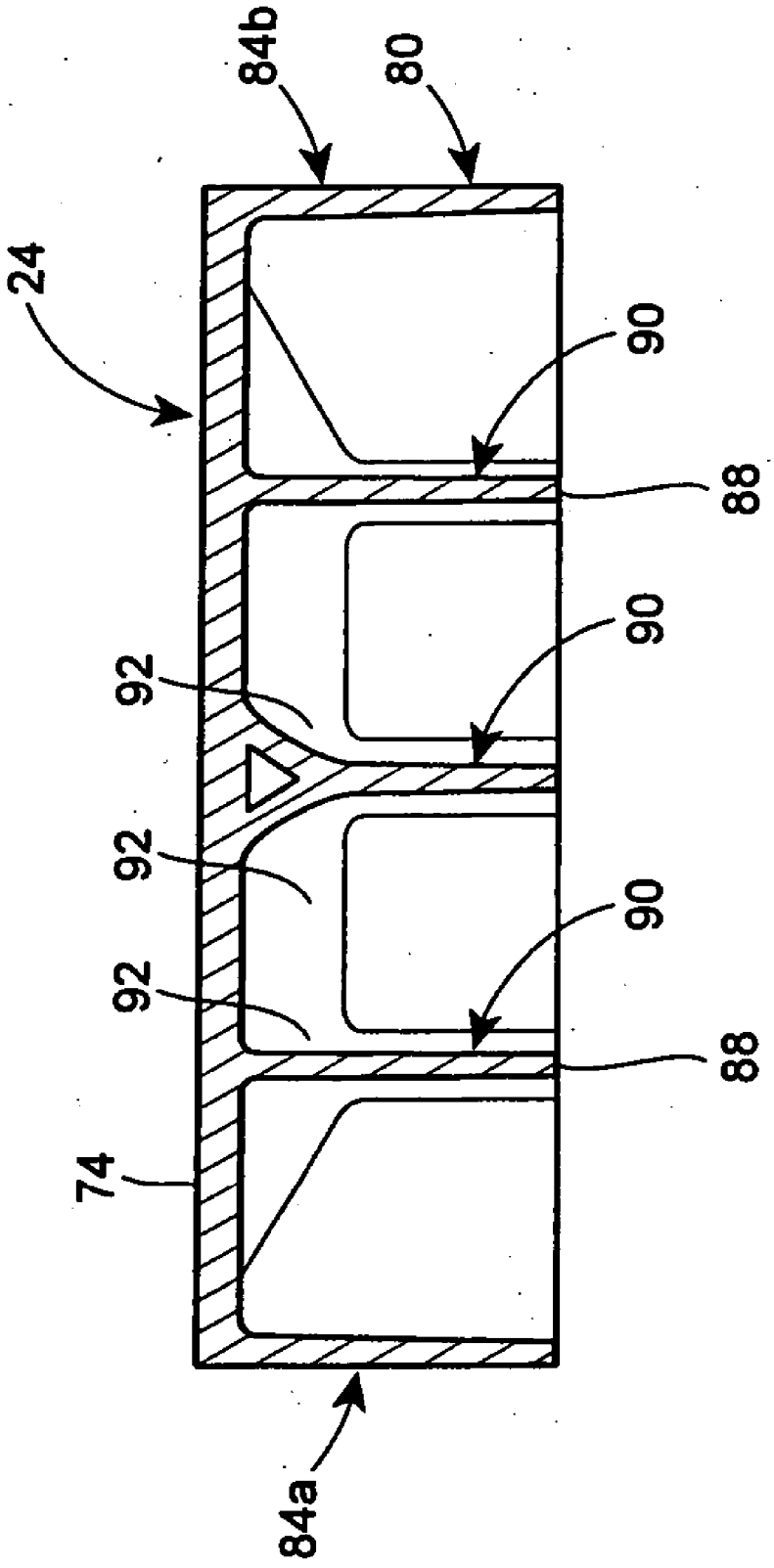

FIG. 10

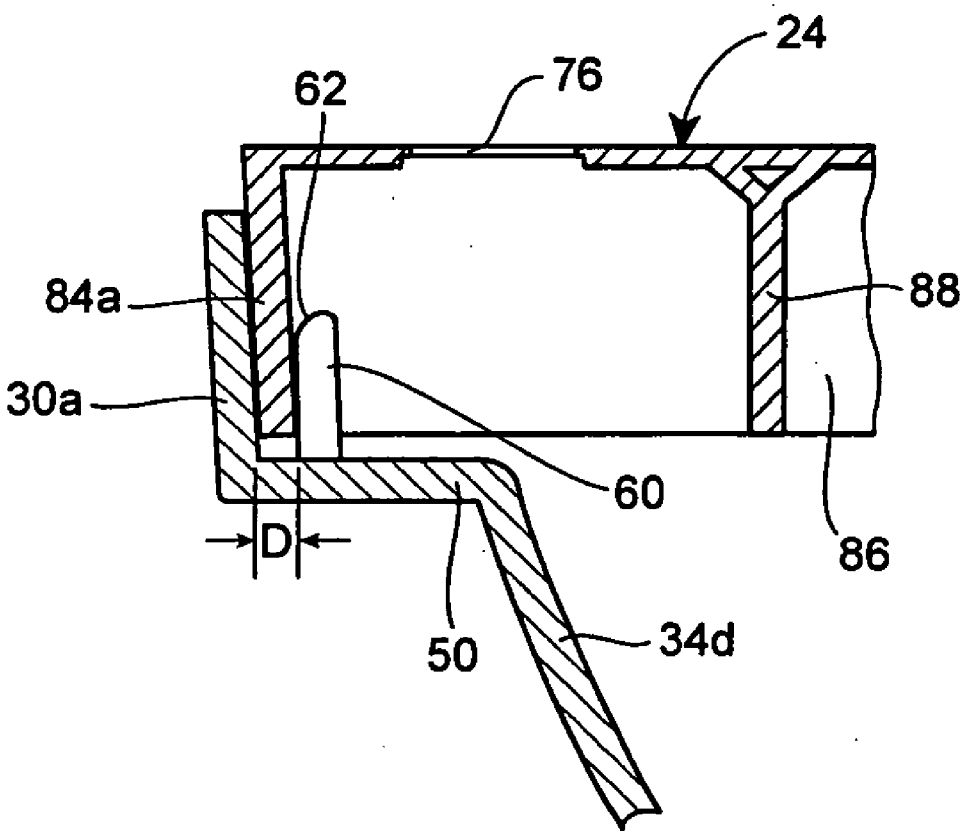

FIG. 11

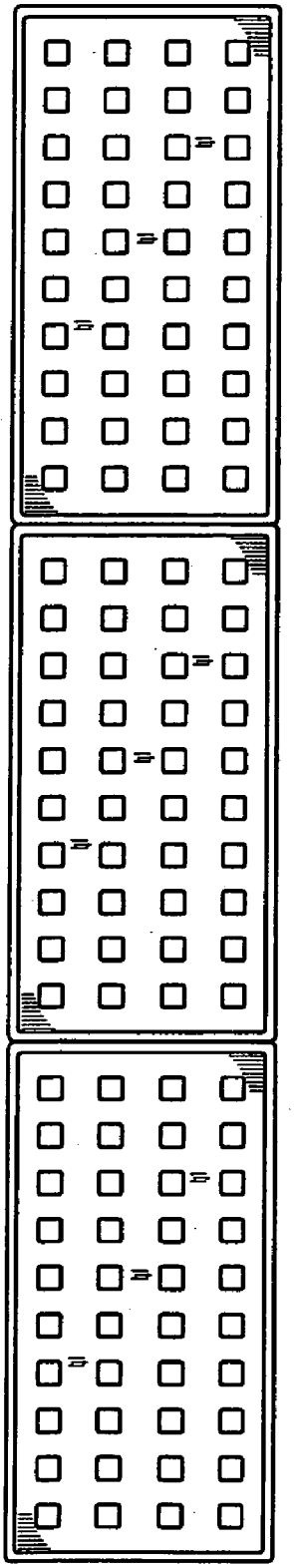

FIG. 12

TRENCH PAN AND GRATE ASSEMBLY

FIELD OF THE DISCLOSURE

[0001] This disclosure relates to trench drains, sometimes called channel drains, and more specifically, to a trench pan and grate assembly that can be used either as an individual unit, or as one of a plurality of such assemblies joined together such as in a series, to create a trench drain system.

BACKGROUND OF THE DISCLOSURE

[0002] Elongate drains, or so-called "trench" drains, are commonly used where there is need to drain a generally extended flat surface, such as a section of a building floor, across a garage door opening, an edge of a parking lot or driveway, and the like. One type of trench drain is a heavy duty type trench for heavy use conditions. It is usually formed of a pre-cast polymer concrete drain unit. This type of trench drain typically has a specific pitch built into each separate trench unit, such that extensive engineering specifications are required for the manufacture, layout and installation of the trench. For example, as many as 20 or more different pieces, each having its own built-in slope, are required to create a trench drain run of a given length. Such heavy duty trench drains are relatively difficult and labor intensive to assemble on-site. Also, since each trench piece is necessarily different, such trench drain systems require substantial manufacturing and mold costs. Further, so that such a system can readily be installed, each separate trench piece is required to be warehoused and purchased, thus making such a sloped-type heavy duty trench drain system extremely costly to make, specify, purchase, warehouse and install.

[0003] Another type of trench drain is typified in U.S. Pat. No. 5,529,436, as owned by Tuf-Tite, Inc., the assignee of the present disclosure. That form of trench drain comprises multiple components including a trench, a grate, and snap-on end caps, but each trench drain section is the same as the next, i.e., they are interchangeable. Integral but removable drain components permit the assembly of multiple size pipes to the bottom of the trench. Regardless what diameter pipe is chosen to be used, that pipe connects to an underlying pitched drainage pipe for the trench drain, as the channel bottom of the trench drain itself is generally "neutral" (i.e., non-sloped) relative to the flat surface in which it is cast in place. That is, there is no pitch of any type provided to the internal bottom surface of the channel forming the trench drain. While generally easy to install and economical in use, an occasional objection has been raised to that type of trench drain, namely that fluids, once entering through the grate member and collecting in the underlying trench, can stand and not be fully drained away, i.e. since the floor of the channel making up the trench is neutral.

[0004] Further yet, there is a so-called trench frame product, with associated grate, that does not require any type of specially-formed underlying trench channel structure. Rather, as normally intended to be installed, a separate frame member is directly fastened to the top portion of an underlying primary drain pipe, whereby after the pipe's top segment is removed, i.e. cut away, that pipe itself becomes, in effect, the channel for the trench so created. Then, at least one sloped secondary drain pipe is attached to the primary pipe, i.e., for draining away fluids collected within the combination trench frame and connected primary header pipe. Disclosure of that type trench frame and grate product is set forth in U.S. patent application Ser. No. 11/110,588 filed Apr. 20, 2005 entitled Trench Drain Frame and Grate Assembly, which is also owned by the assignee of the present disclosure.

[0005] Notwithstanding these and other various trench drain-type products, there has remained a need for an elongate trench drain product that can permit connection to several different versions of a given plumbing pipe size, that has sufficient built-in slope to prevent any standing water, and that can be used either separately, or as part of a plurality of identical units connected into a series of a desired configuration, to create an extended trench drain system.

[0006] Previously, the known injection-molded plastic grates used with trench drains were all formed with polyethylene injection molding materials having a so-called melt number greater than 1.0, and normally they were made with HDPE molding material. However, to the extent known, there have been no trench drain grates formed with injection molding material having a so-called fractional melt, i.e. with a melt number less than 1.0. Also, as best known, while so-called gas-assist injection molding procedures have been previously used in forming non-grate type of on-site waste and drainage products, such as risers, riser lids, and riser pans, no such gas-assist procedures have been successfully used in forming grates for on-site waste and drainage products. Further, there have been prior unsuccessful (and as best understood since they have since ceased) attempts at using gas-assist procedures when injection-molding of fractional melt materials into unrelated (non-grate) type products, such as flat air conditioner pads. Thus, until the present disclosure, there has been no known use of gas-assist procedures for injection-molding of grates that are intended for use with drainage and on-site waste products.

[0007] Prior known injection-molded plastic grates, once formed, suffered from numerous twists and warpage. For example, they always needed to be fastened down securely to an underlying trench drain or trench frame component to become relatively flat. That is, such prior known injection-molded grates were normally not flat, square and straight enough to be able to be sold and used as separate grate units alone, i.e. such as to be purchased for use with separately-formed trenches at a job site. Further, many end users desire at least a 6" wide grate, i.e. rather than a 4" plastic grate as is commonly sold, such as by the assignee of the present disclosure, with trench drain and trench frame units. But there is the risk that such wider grates would not be sufficiently strong to handle medium-to-heavy vehicle traffic, and might break or deform with such heavy duty use. Thus, there has remained a need for plastic grate products that could be formed to be heavy duty and dimensionally stable.

SUMMARY OF THE DISCLOSURE

[0008] The present disclosure provides a combination trench pan and grate assembly where the pan is long and narrow, i.e. with a length-to-width ratio greater than 1:1, and thus, generally rectangular in shape, and has downwardly-ramped transition bottom walls terminating in a round pipe receiving fitting that is, through use of a bushing, able to advantageously accommodate the common different types

of commercially-available plastic plumbing pipe of a given nominal size. A plurality of individual trench pan and grate assemblies can be formed end-to-end into an elongate trench drain system. That is, each assembly can be connected, through a bottom stub pipe and upwardly-facing sweep tee component, to an underlying sloped main drainage pipe. Importantly, however, because the floor of each trench pan is ramped, i.e., downwardly sloped, rather than being neutral, no water or other fluids are allowed to stand within each respective trench pan. Instead, as collected, such fluids are immediately drained out of the trench pan's bottom to the underlying drain pipe.

[0009] During installation, unlike many prior trench drain components, no separate mounting equipment is required to position and hold the trench pan in place, while the concrete is being cast about it. This is because the trench pan is first fastened in place in the correct position and height, such as by solvent welding, to the top of an underlying generally vertical stub pipe section, which in turn extends upwardly from an appropriate sweep tee (or sanitary tee) which itself connected to the underlying sloped drainage pipe. That same underlying sloped drainage pipe can be connected to yet other selectively-placed trench pans in the same manner, whereby an entire layout out of separately-positioned trench pan and grate assemblies can be installed in a given floor surface or drainage area, or alternatively, a running end-to-end series of such identified assemblies can be formed.

[0010] An integrally-formed but removable strainer plate covers off the pipe receiver fitting that extends downwardly from the ramped bottom walls of the trench pan. The separate grate member is installed and fastened down, via threaded fasteners, to the trench pan to complete the assembly. While the present disclosure is not limited in this regard, the elongate trench pans can be formed, for example, as short as 12 inches long, or instead as long as 3 feet, or even longer. Through use of the present trench pan and grate assembly, the problem of standing water is eliminated. Further, a secondary drain pipe is not needed. Further yet, there is no need for any special order, multiple component sloped trench drain system, i.e. where each component must be specifically and carefully fastened to adjacent ones of the correct slope and size, so as to allow the overall slope trench drain to be formed.

[0011] Rather, with the present disclosure, only a single type trench pan and grate unit, i.e. of one shape and one size, is needed to make a trench drain, whether installed singly at one location, installed instead at multiple separate locations, or installed in an abutting series arrangement.

[0012] Also, the grate used with the present trench pan is preferably formed of a fractional melt injection-molding material, and then through use of gas-assist molding procedures, results in a grate having substantially improved impact strength characteristics and dimensional stability.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. **1** is a top perspective view of the trench pan of the present disclosure, and with the grate removed for better viewing;

[0014] FIG. **2** is a bottom perspective exploded assembly view of the trench pan of FIG. **1**, with an associated bushing;

[0015] FIG. **3** is a side elevation view of the trench pan of FIG. **1**;

[0016] FIG. **4** is an end view of the trench pan of FIG. **1**, and with a corner portion broken away for better viewing of interior components;

[0017] FIG. **5** is a top plan view of the trench pan of FIG. **1**;

[0018] FIG. **6** is a bottom plan view of the trench pan of FIG. **1**;

[0019] FIG. **7** depicts in perspective view the trench pan and grate assembly of the present disclosure, in combination with a sweep tee, as installed within a drainage piping layout;

[0020] FIG. **8** is a top plan view of the grate of the trench pan of FIG. **1**;

[0021] FIG. **9** is a bottom plan view of the grate of the trench pan of FIG. **1**;

[0022] FIG. **10** is a cross-section of the grate viewed along lines **10-10** of FIG. **9**;

[0023] FIG. **12**

[0024] FIG. **11** is a cross section, broken away, of the grate as securely received on the trench pan; and

[0025] FIG. **12** is a top plan view of a plurality of the trench pans of FIG. **1**, arranged in a series.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0026] Having reference to the drawings, wherein like reference numerals indicate corresponding elements, there is shown in FIGS. **1-6** an illustration of an elongate trench pan and grate assembly, generally denoted by reference numeral **20**. The overall assembly **20** is formed to be used as an individual modular unit, i.e. capable of being used singly or as part of an interconnected plurality formed into a running trench system. Assembly **20** comprises a trench pan **22**, a grate **24**, and when needed, depending on the associated pipe size, a separate adapter bushing **26** (see FIG. **2**). The trench pan **22** is integrally formed as a one-piece elongate trench unit having a peripheral wall formed of four integral generally vertically-aligned edge walls, comprising end walls **28***a*, **28***b* and side walls **30***a*, **30***b*. The configured bottom drainage wall **32** of the trench pan **22** preferably comprises four ramped, i.e. downwardly sloped, bottom wall portions **34***a, b, c, d*. Preferably, ramped bottom walls **32***a, c* have generally flat-angled walls, while ramped bottom walls **32***b, d* are generally curved, i.e., formed as non-linearly sloping walls. The respective ramped bottom walls **34***a, b* terminate at their respective lower edges in a flat annular ring surface **36** having a drain opening **37**, across which is formed a frangible, i.e. removable, strainer plate **38**. The strainer plate **38** has a series of drain apertures **40** of varying sizes and is integrally connected, via reduced thickness areas **42**, to the annular ring surface **36**. The drain apertures **40** in the strainer plate **38** are preferably less than ½ inch by ½ inch in size, so as to cause the plate **38** to act as a secondary grate (relative to grate **24**), i.e. to help strain out even smaller sized debris, for subsequent cleaning and removal, as desired. It will be understood that, if the end user of assembly **20**, once it is installed, does not wish to have the additional water flow restriction caused by the extra strainer plate **38**, then the

same can be removed, i.e., by breaking it away from ring **36** along the reduced thickness connections **42**.

[**0027**] Extending downwardly from the sloped bottom wall **32**, below the ring surface **36**, is a female hub section acting as a pipe-receiving fitting **44**. In one sample made in accordance with the present disclosure, the trench pan **22** is formed so that the pipe fitting **44** was sized to accept 4-inch PVC plumbing pipe, and particularly so-called Schedule 40 4-inch plastic plumbing pipe. However, if either one of so-called SDR-35 or ASTM 2729 4-inch plastic plumbing pipe is desired to be used instead, then the adapter bushing **26** (see FIG. **2**) can be inserted into the interior of the pipe fitting **44**. Then, the associated stub pipe extension **46** (see FIG. **2**) is inserted at one end into either the interior of the pipe fitting **44** or of the bushing **26**, depending on which type 4 inch pipe, for example, is being used for the stub pipe **46**. Then, the other end of stub pipe **46** is inserted into an upwardly facing sanitary or so-called sweep tee member **45**, which in turn is connected to an underlying sloped drainage pipe **47** (see FIG. **7**). Because the trench pan **22**, bushing **26**, and stub pipe **46** are all formed of a PVC or an ABS material (i.e. a solvent—weldable plastic material), they can all preferably be rigidly secured and sealed together by use of a suitable and commonly-available solvent weld material (not shown).

[**0028**] Because of the adapter bushing **26**, one trench pan **22** can be used with any of the multiple different types of commonly-available plastic plumbing pipe of a given size, i.e. given diameter. Of course, the diameter of the pipe fitting **44** can be formed to be of any desired size so as to accommodate a chosen, yet different, diameter of commonly available plumbing pipes, such as, for example, formed to accept nominal 3 inch or 6 inch size pipes, instead of a nominal 4 inch size pipe.

[**0029**] Further, for the sample that was made in accordance with the present disclosure, but it will be understood the disclosure is not limited in this regard, the overall width of the trench pan was chosen to be approximately 6 inches, and the overall length was approximately 12 inches. However, it will be readily understood that, while still preferably using an approximately 6 inch width (or even greater width if needed), the overall length of the elongate trench pan **22** could be formed to be, for example, approximately 3 feet, i.e., so as to be of maximum length to take best advantage of commercially available shipping cost efficiencies. Further, whether formed of a shorter, e.g., a 12 inch length, or a longer, e.g., a 36 inch length, the overall height of the trench pan **22** would preferably remain approximately 4-¼ inch. In any case, regardless of the overall length chosen for the trench pan **22**, the bottom wall **32** would continue to have sufficient slope, i.e., a slight draft angle towards the middle, so as to properly collect and drain away fluids via the ramped bottom walls **34***a*-**34***d*.

[**0030**] Turning to FIGS. **1**-**6**, it will be seen that the configuration of the lower edges of the walls **28***a, b* and **30***a, b* create a notch area, generally designated by reference numeral **48**. That is, notch area **48** is formed by a generally horizontally-extending ledge portion **50** and a vertical wall portion **52**. Formed in the vertical wall **52**, along the longitudinal edges of the trench pan **22**, are a series of bosses **54** each having a fastener aperture **56** for receiving a threaded fastener **58** (see FIG. **7**). Further, extending upwardly from horizontal ledge wall **50**, and spaced inwardly from the respective sidewalls **38**, **30***b* (by a separation distance "D"—see FIGS. **4** and **11**), are a series of upstanding posts or teeth **60**, each of which has a rounded inner upper corner **62**. The thickness of the respective longitudinal side walls **84***a,* **84***b* of the grates' peripheral wall **80** (discussed later herein) are able, when grate **24** is frictionally-fitted onto the trench pan **22**, to fill the gap of separation distance D, i.e. between teeth **60** and ledge wall **50** (see FIG. **11**).

[**0031**] Turning now to FIGS. **8**-**10**, there is shown the grate **24** as having an upper grate wall **74** formed with a matrix of drainage openings **76**, downwardly-extending bosses **77** containing fastener apertures **78** (to receive the threaded fasteners **58** see FIG. **7**), and a downwardly-extending peripheral wall **80** formed of end walls **82***a,* **82***b,* and side walls **84***a,* **84***b.* (Preferably, the drainage openings **76** are formed so as to be compliant with, for example, the ADA (American With Disabilities Act), and more preferably, are formed to be rectangular and are approximately ½ inch by ½ inch in size.) Extending downwardly from the grate wall **74** and formed transversely between grate sidewalls **84***a,* **84***b* are a series of transverse cross walls **86**. Also, as formed longitudinally between grate end walls **82***a,* **82***b,* and interjoined with transverse cross walls **86**, are a series of longitudinal walls **88**. As seen in FIG. **9**, where the respective transverse longitudinal walls **86** and **88** merge, an enlarged post-like area **90** is created. Further, as seen in FIGS. **9** and **10**, where the upper reaches of many of the transverse cross walls **86**, and at least one of the longitudinal walls **88**, merge into the lower surface of upper grate wall **74**, these walls, in effect, flare out to form an enlarged generally V-shaped channel area **92**. In one sample made in accordance with the disclosure, only the central longitudinal wall **88** had such a flared area **92**, whereas each of the respective transverse cross walls **86** were formed to include such a flared area **92**. However, any or all of the longitudinal cross walks **88** could be so formed, i.e., flared. Further, preferably, the cross sectional size of the flared area **92** of the central longitudinal wall **88** is greater than that of the flared areas **92** of the transverse cross walls **86**.

[**0032**] More specifically, such flared areas **92** are formed so as to be internally hollow (see FIG. **10**). This is the result of using gas-assist molding procedures during the manufacture of the grate **24**. That is, pressurized gas is introduced into the mold cavity when the hot molten plastic molding material is simultaneously being injected under pressure into the mold (not shown). The primary effect of introduction of such pressurized gas during the gas-assist molding procedure, in essence, is to help force the molten plastic injection molding material into and on through the various internal cavities in the pattern of the mold (not shown) in which the grate **24** is formed, and then on against the mold's walls. When formed using such a gas-assist procedure, the overall strength, and primarily the weight-bearing capacity, of grate **24** is significantly improved. For example, in comparison to a narrower 4-inch wide grate, but otherwise similarly designed grate, but as made without use of any gas-assist procedures, the present grate **22** is believed to have at least a 40% increase in weight-bearing capacity. Furthermore, by using such a gas-assist procedure, it has been found that previously unusable, but otherwise desirable, injection molding materials can now actually be used to form the grate **24** for use with trench drain components. These include

molding materials having so-called fractional melts (i.e., a melt number less than 1.0). Preferably, the gas-assist formed grate of the present disclosure is formed of a fractional melt material having a melt number between approximately 0.4 and 1.0. For example, in one sample made in accordance with the present disclosure, a fractional melt molding material comprising fractional melt, high density polyethylene and having a melt number of 0.5 was used.

[0033] Advantageously, with the present disclosure, where gas-assist is used, such fractional melt materials can now be satisfactorily used in injection molding plastic grate parts. Normally, such fractional melt materials could not be used for forming a grate, as they are so thick and sluggish in use as to not move to completely fill in all the various mold cavities, except perhaps through use of very significantly increased mold injection pressures (i.e. such as in the elevated range of between 25,000 and 27,000 psi), but that requires significantly more costly molding equipment, and has its own problems. Instead, only normally-required injection pressures, i.e. in the normal range of approximately 20,000 to 22,000 psi, need be used now when forming the gas-assist-created grate of the present disclosure. This is a significant advantage, and provides cost savings.

[0034] In any event, the use of such low melt molding materials results in a grate **22** having superior strength and superior dimensional stability properties, as compared to the prior known grates as formed of high melt molding materials. For example, the high strength grate **22** made in accordance with the present disclosure, i.e. as formed of fractional melt material, using gas-assist molding procedures, would likely at least double the impact resistance for the grate, as compared to a similarly sized grate part, but as made using an injection molding HPDE material that instead had a melt index greater than 5.0.

[0035] Further, the known prior art grates for trench drains were made without gas-assist procedures and with a greater-than-1.0 melt HDPE material, with the results that those grates were often formed as curled or otherwise out-of-alignment, except when they were screwed down within a trench drain or trench frame. However, advantageously, the grate **24** as made in accordance with the present disclosure (i.e., via gas-assist procedures using fractional melt material) now remains substantially dimensionally stable and of increased impact strength. That is, the presently-disclosed grates remain generally straight, flat and square-cornered, as believed to be within +/−1%. This is a significant improvement over prior art injection-molded grates, since the prior grates were not sufficiently dimensionally stable as to be separately useable in angle iron rail-type trench drains, i.e., trench drains as formed up from angle iron rails encased in and above a concrete trench. In contrast, the dimensionally-stable grates of the present disclosure will lie substantially flat (i.e. they do not curl up or have out-of square corners), such that they can be readily used in such alternate-type trench drain systems.

[0036] Instead of using an injection-molded plastic grate, a grate suitably-sized and formed of cast iron or other metal could be used with trench pan **22**. Thus, it will be understood that the presently disclosed trench pan is not limited to use only with injection-molded plastic grates.

[0037] As seen in FIG. **12**, the trench pan and grate assembly of the present disclosure can be easily and cost-effectively used in an elongated end-to-end series, in lieu of a long run of heavy duty individually pre-sloped trench drain components of the prior art. Also, advantageously, there is no need for extra mounting and holding components, i.e., reinforcement bar supporting members, to maintain the position of the individual trench pans during the concrete casting installation: process. Further, when a plurality of trench pan and grate assemblies are laid out in an end-to-end arrangement, they need not be drained so as to flow in only one direction, via a single underlying sloped drainage pipe. Instead, one half (or less, or more as desired) of the given number of such end-to-end assemblies can be drained in a second direction via a second sloped drainage pipe. When laid out in an end-to-end series, there is no flow occurring trench pan-to-trench pan, unlike with prior trench drains of the present assignee. Rather, each trench pan is a fully draining unit unto itself.

[0038] Thus, with the trench drain and grate assembly of the present disclosure, the end user gets all of the advantages (i.e. sloped floor to prevent standing fluids) of prior expensive pre-sloped trench drain products, but without the cost, and which all can be accomplished with only one cost-effective part to make, store, purchase, warehouse, and also which can be used as a single location trench drain, or in an end-to-end running series of such trench drain and grate assemblies.

[0039] Finally, by using gas-assist molding procedures, for the first time an injection-molded grate for use with on-site waste and drainage component can be formed of fractional melt materials that provide substantial impact strength and substantial dimensional stability, and without the need for use of extra high cost molding equipment having extraordinarily high injection molding pressures. Also, for the first time, the present disclosure allows the resulting gas-assist, fractional melt, injection-molded grates to be sold and used as separate items, due to their resulting flatness and other dimensional stability.

[0040] While certain preferred embodiments have been disclosed herein, it will be appreciated that variations may be made thereto without departing from the scope of the appended claims.

I/We claim:

1. A high strength injection-molded plastic grate for use with onsite waste and drainage system components, comprising:

a generally planar drain member having a plurality of through openings for permitting drainage of fluids therethrough;

a plurality of transverse cross walls connected to the drain member and extending generally downwardly therefrom;

at least one of the transverse cross walls formed to have a molding gas-assist-created void substantially at the interface of that at least one transverse cross wall and the drain member;

a plurality of longitudinal walls connected to the drain member and to the respective transverse cross walls, and extending downwardly from the drain member; and

the grate being formed of fractional melt injection molding material.

2. The grate of claim 1, and wherein at least one of the longitudinal walls is formed to have a molding gas-assist-created void at the interface of that at least one longitudinal wall and the drain member.

3. The grate of claim 1, wherein the fractional melt material comprises HDPE material having a fractional melt between approximately 0.4 and 1.0.

4. The grate of claim 1, and wherein all of the transverse cross walls are formed with a molding gas-assist-created void.

5. The grate of claim 1, wherein the gas-assist-created void of the at least one of the longitudinal walls is of a greater cross-sectional size than the gas-assist-created void of the at least one of the transverse cross walls.

6. The grate of claim 1, and a peripheral edge wall extending downwardly from substantially the perimeter of the planar drain member, and wherein the outer ends of the respective transverse cross walls and longitudinal walls are integrally connected to the edge wall.

7. The grate of claim 6, and a plurality of generally vertically extending, threaded fastener receiving bosses formed along the peripheral edge wall.

8. The grate of claim 1, wherein each of the plurality of through openings is generally of a square shape and not greater than approximately ½ inch by ½ inch.

9. The grate of claim 1, wherein on an underside of the grate, each of the plurality of through openings is isolated by a portion of at least one of the longitudinal walls and a portion of at least one of the transverse walls.

10. A trench drain component, comprising:

an elongate trench pan member having a generally upright peripheral wall, a series of ramped lower walls extending generally downward from the peripheral wall and terminating in a pipe receiving fitting, wherein the length-to-width ratio for the elongate trench pan member is greater than 1:1.

11. The trench drain component of claim 10, and an injection-molded grate member adapted to be received by the trench pan member, the grate member being formed of fractional melt molding material and having gas-assist cavities.

12. The trench drain component of claim 11, wherein the grate is at least approximately 6 inches wide.

13. The trench drain component of claim 10, wherein the length-to-width ratio is at least 2:1.

14. The trench drain component of claim 10, and an adapter fitting operable to be received by the pipe receiving fitting so as to permit connection of at least one given size commonly-available plastic drain pipe segment.

15. The trench drain component of claim 14, wherein the plastic drain pipe segment has a nominal diameter of 4 inches.

16. The method of forming injection-molded plastic grate components to exhibit substantial impact strength and substantial dimensional stability, comprising the steps of:

using an injection mold for forming a grate member having gas-assist internal cavities;

using a fractional melt molding material in the mold; and

using injection molding pressures less than approximately 22,000 psi.

17. The method of claim 16, and the step of forming the grate to measure at least approximately 6 inches in nominal width.

18. The method of claim 16, and the step of forming the grate to have a length-to-width ratio of greater than 1:1.

19. The method of claim 16, and selecting the fractional melt material to be fractional melt high density polyethylene material.

20. The method of claim 19, and wherein the fractional melt is between approximately 0.4 and 1.0.

21. A trench drain component for use individually or in series, comprising:

a trench pan member having a generally upright peripheral wall, a lower pipe receiving opening, and a bottom drain floor formed of ramped drainage walls connecting the peripheral wall to the lower pipe receiving fitting, and the trench pan member further adapted to permit at least two trench pan members to be substantially abutted together, and each separately connected by the lower pipe receiving opening to an underlying drainage pipe, when desired.

22. The trench drain component of claim 21, and a grate member adapted to be received by the trench pan member.

23. The trench drain component of claim 21, wherein the peripheral wall includes:

an upper wall portion adapted to surround the grate member;

an intermediate ledge extending inwardly from, and generally perpendicularly to, the upper wall portion; and

a lower wall portion extending downwardly from the intermediate ledge, said lower wall portion disposed inwardly of the upper wall portion, and the bottom drain floor connected to the peripheral wall at a bottom end of the lower wall portion.

24. The trench drain component of claim 23, wherein the intermediate ledge and the lower wall portion define a notch area along an exterior of the trench pan member.

25. The trench drain component of claim 23, further comprising a plurality of upstanding teeth disposed on the intermediate ledge, each of the upstanding teeth being spaced inwardly from the upper wall at least a distance equal to a thickness of an outer perimeter wall of the grate member, said teeth and said upper wall frictionally securing the outer perimeter wall therebetween, whereby the grate member is releasably retained by the trench pan member.

26. A trench component for use in a trench drain system, comprising:

an elongated pan member having an upstanding peripheral wall, a pipe receiving fitting for connection to commonly-available plastic drain pipe, a generally ramped bottom wall extending from the peripheral wall to the pipe receiving fitting, and wherein the length-to-width ratio for the pan member is greater than 1:1.

27. The trench component of claim 26, and a strainer member formed substantially across one end of the pipe receiving fitting.

28. The trench component of claim 27, wherein said strainer member is removably connected across said one end of the pipe receiving fitting by a plurality of reduced thickness connection segments, said reduced thickness con-

nection segments being breakable to facilitate removal of the strainer member from the end of the pipe fitting.

29. The trench component of claim 26, and a grate member adapted to mount the trench pan, the grate being formed of fractional melt injection molding material.

30. The trench component of claim 26, and wherein the grate is formed to have gas-assist chambers.

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