(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 August 2003 (07.08.2003)

PCT

(10) International Publication Number
WO 03/064922 A2

(51) International Patent Classification[7]: F23B 7/00

(21) International Application Number: PCT/US03/02557

(22) International Filing Date: 29 January 2003 (29.01.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/353,850 31 January 2002 (31.01.2002) US

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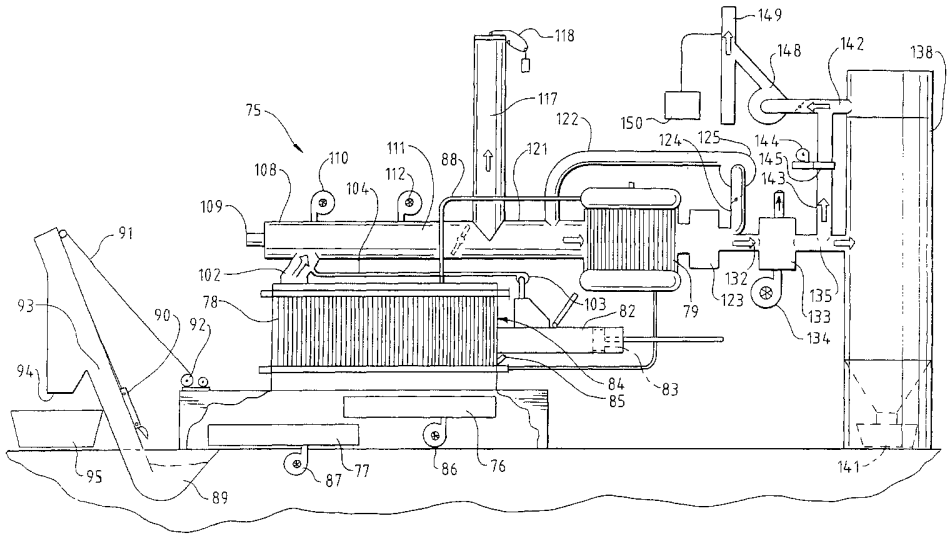
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**
— *without international search report and to be republished upon receipt of that report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: INCINERATOR SEALS




(57) Abstract: Incinerator improvements involving seals around a pulsing hearth floor or between moving hearth floor sections. The seals reduce or prevent the passage of contaminating gases into or out of an incinerator chamber having a moving hearth. The seals may utilize troughs filled with a fluid such as water, sand, or pebble-like material. Alternately, the seals may include heat-resistant webs of material attached to the relatively moving parts, flexible, resilient sections of material such corrosion resistant, spring stainless steel or heat-resistant fabric affixed to one part and held against the other, or pads of fibrous, heat resistant material including those of alumina or silicon oxide fibres lodged between the moving parts. An air knife may keep combustion gasses within the main incinerator chamber. Combinations of these different seals can achieve isolation of the environment and obviate possible deleterious side effects of using only one type.

WO 03/064922 A2

# INCINERATOR SEALS

INVENTOR: John N. Basic, Sr.

## BACKGROUND

John N. Basic, Jr., in his U. S. patents 4,438,705, 4,475,469, 4,516,510, 4,706,578, 5,007,353, 5,209,169, and 5,413,715, has significantly advanced the science of refuse incineration and showed how to appropriately control the "three T's" of combustion, viz., time, temperature, and turbulence. In the first and third of these patents, Mr. Basic has disclosed methods and equipment for incineration that have achieved significant improvements in the efficiency of incinerating different types of refuse with the optional recovery of heat for further economic use. These two references establish three zones of combustion, make temperature measurements at significant locations, and alter the conditions of combustion to achieve the desired efficiency and ecological acceptability. Further, the patents accomplish their objectives while using bulk refuse, which simply means that it requires no processing before its introduction into the main combustion chamber. The system displays such versatility that it can adjust to remarkably different types of refuse and yet achieve environmentally sound incineration.

The principles related in these patents have such wide applicability that they do not even require refuse as a fuel. The discoveries find use in effectuating the combustion of hydrocarbon-containing fumes emanating from a generalized, undefined source. The patents specifically cover the use of the system for such fumes without the presence of a main incinerator chamber.

Where a main chamber finds use, however, the patents show improvements for this component of an incinerator system as well. These improvements include, first, a stepped

hearth floor with air nozzles located in the vertical faces of the steps. As a separate consideration, the incinerator combustion chamber receives an approximately stoichiometric amount of oxygen for the chamber's burning contents, and the chamber's floor and volume bear general respective relationships to the heat content of the burning refuse. Separately, the air moving into the combustion chamber has an upper limit to its entering velocity to avoid lifting unburned particles of refuse. Alternately, various dimensions of the chamber's wall bear specific relationships to each other for improved incineration.

In the second and fourth patents listed above, Mr. Basic showed how to convey material sitting on a floor, most likely a hearth floor in a main incinerator chamber. The patents disclose nonsinusoidal motion of the hearth or floor that actually pulses the material forward. The motion of the floor closely resembles the activity of shoveling snow or other material. In addition to imparting a general progression of the material, especially burning refuse, the pulsing motion accelerates and decelerates and thus also jostles the mass of refuse vigorously to increase the burning rate and effectiveness.

The first four patents of Mr. Basic discussed above established an entirely new regiment for the incineration of refuse. They gave the essential conditions for the incineration of the waste and showed how to move bulk refuse through the main combustion chamber to facilitate the process. With these parameters established, Mr. Basic then set to work to refine and improve the system that he had developed. In the process, he increased the sophistication of his incinerator system by an order of magnitude and its ability to reliably handle different types of refuse from those even contemplated previously. The issuance of the last three patents above justly rewarded his subsequent efforts.

In the earliest of these three, Mr. Basic sets forth various incinerator improvements. Amongst these appears the concept of splitting the reburn tunnel into two parallel reburn sections, each capable of performing the same functions on fumes emanating from a source such as the main combustion chamber. The versatility provided by two smaller reburn section dramatically increases the control over the three T's of combustion.

As a separate aspect, the patent places an "excitor" in the reburn tunnel. The excitor actually reduces the cross-sectional area in the center of the tunnel where the mass flow of the flue gas is located and forces the flume gasses to pass around it. The shortened distance between the gas molecules and a wall, be it the outer or the excitor wall, and the concomitant reradiation of heat give dramatically improved control over the three T's. The excitor may, in addition, provide nozzles introducing air into the tunnel for temperature and time control as well as assuring sufficient oxygen for complete combustion. Other aspects of the excitor include providing the air through the excitor's supports in the reburn tunnel and assuring that the excitor exterior has a low thermal conductivity to retain the generated heat. Additionally, the patent has shown that placing a damper at the outlet of the reburn tunnel gives even further control over the time (one of the three T's) of the combustion.

The next patent, 5,209,169, covers an entirely new feature placed into the combustion chamber having a hearth floor. Specifically, the combustion chamber may include a grate located adjacent to the inlet door and above the hearth. This grate will hold waste having either a high moisture or a high B.T.U. content. In the former case, the material dries while on the grate. In the latter, some of the volatile hydrocarbons burn or are driven off to prevent overheating and possible slagging on the hearth floor. In either

case, the fixed hydrocarbon refuse falls through the grate to undergo thorough combustion on the hearth below. The refuse may do so while it still contains over half of its combustible hydrocarbons. Alternately, the grate may have openings of a particular size to accomplish the stated objectives. A fluid passing through the grate, such as air or steam, may serve to cool the grate, and a refractory may serve to further protect the grate. When the grate has air passing through it, the gas may then directly enter the combustion chamber to enhance the combustion efficiency. Moving the grate can jostle its contents to permit the desired burning and encourage dried or partially burned refuse to fall through to the hearth underneath.

The latest patent 5,413,715 listed above relates to a scoop for taking ashes out of a pool of water after the incinerator places them there. The scoop travels along a track, and when it reaches the bottom, it closes so that it can grab the ashes. After travelling upward on the track, the scoop opens, and the ashes drop out into a receptacle of some sort, like a truck.

As seen from the above, the art and science of refuse incineration has advanced significantly under Mr. Basic's creativity and tutelage. As the recent history of incineration given above shows, each step forward opens new vistas for further improvements. A number of such advances appear below.

## SUMMARY

An incinerator typically has a substantially enclosed combustion chamber with an inlet for the introduction of refuse and an outlet for the egress of the products of combustion. The combustion chamber also has floor means for supporting refuse and wall means, located above the floor means and forming a substantially closed perimeter with

the floor means. With the floor means, the wall means provides the substantially enclosed combustion chamber.

As discussed above with regards to John Basic's patent 4,475,469, the incinerator may also include some form of motion means, coupled to the floor means and the wall means. The motion means moves the floor means along a substantially predetermined path relative to the wall means. Some incinerators, however, move their "floors" along precise paths. One such system utilizes a "rotary kiln" type of arrangement. The rotating kiln may have a simple seal with the exterior wall since the rotary motion follows a precise path relative to the wall. The advantages of the Basic system and especially its pulsed hearth over this type of incinerator have received extensive discussion in various of the patents referenced above.

However, the path along which the moving means moves the floor means may show substantial deviations from the predetermined, desired path as in the Basic patent 4,475,469. These deviations may result from one or more of the pulsing bags proving less effective than it should or than the other bags. Or, the load on the hearth may lie towards one side more than the other. These and other factors may well produce actual pulsed motion showing substantial aberrations from the norm. Accordingly, the deviations from the desired path impose substantial burdens on any device incorporated into the incinerator that has the purpose of sealing the space between the floor means and the wall means against the passage of gas between them.

An improvement to the incinerator thus comprises a seal means, coupled to the wall means and the floor means and extending along at least a portion of the closed perimeter. The seal means must substantially prevent the passage of gas between the wall means and the floor means at the portion of the closed perimeter alluded to above when

the motion means moves the floor means generally along its path relative to the wall means. The seal means should especially accomplish this task when the actual path followed by the floor means experiences substantial deviations from its predetermined path.

In particular, the seal means may comprise first a retaining means, coupled to one of the floor means and the wall means, for holding a substantially fluidized, nongaseous material. Secondly, the seal means would then include an immersion device, coupled to the other of the floor means and the wall means, and located at least in part, in the fluidized material as the floor means moves along its substantially predetermined path.

Alternately, the seal means may comprise a substantially flexible, gas-impervious, heat resistant web of material coupled to the floor means and to the wall means. As a further possibility, the seal means might incorporate a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between the floor means and the wall means.

As a further possibility, the seal means includes a flexible, gas-impervious, substantially form-retaining material, affixed to one of the floor means and the wall means and urged against the other of the floor means and the wall means to provide a friction seal as the floor means moves. This material may take the form of a sheet of substantially rigid, but somewhat flexible material such as stainless steel. A very different type of friction seal may constitute a bladder held on one of the surfaces and urged against the other. The bladder, for example, may contain air or some other fluid or a flexible, resilient substantially solid material.

As a separate aspect, the floor means may comprise first and second floor sections meeting along a substantially linear path. As before, the floor means supports burning

refuse, A wall means, located above the floor means, along with the floor means provides the substantially enclosed chamber. In this instance, the motion means couples to the first and second floor sections and the wall means and moves the first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to the wall means., Here the improvement comprises seal means which couples to the first and second floor sections and extends along at least a portion of the linear path. The seal means substantially prevents the passage of gas between the first and second floor sections at the portion of the linear path when the motion means moves the first and second floor sections relative to each other.

The seal means between the two sections of the floor means may take any of the forms described for the interface between the floor means and the wall means described above. In this case, a seal means relates (for example, couples) to one of the first and second floor sections, and, in a similar fashion, also relates to the other floor section in a fashion very similar to the seal means between the floor and wall means. The various types of particular seals may receive the labels of frictional seal, web seal, fibrous pad seal, and fluid seal. The frictional seal, in turn, includes the sheet metal seal and the bladder seal. Any or all of these may find use as the seal means between two moving floor sections.

In even more general terms, a system may comprise first and second surfaces meeting along a substantially linear path. A motion means, coupled to the first and second surfaces, moves the first surface along a substantially predetermined path relative to the second surface. An improvement to this system comprises seal means, coupled to the first and second surfaces and extending along at least a portion of the linear path. The seal means must substantially prevent the passage of gas between the first and second surfaces

at its portion of the linear path where the first and second surfaces meet when the motion means moves the first surface relative to the second surface generally along the predetermined path. In particular, the seal means must accomplish this when the motion means actually causes substantial deviations in the motion of the two surfaces from the predetermined path.

Again, the particular types of seal means given above for the interface between the floor means and the wall means or between the two floor sections may find use between the first and second surfaces. As before, such a seal means relates (for example, couples) to one of the first and second surfaces and to the other surface as do the seal means between the floor and wall means or between the two sections of a floor means.

Additionally, the seal means, whether between a floor means and a wall, between two floor means sections, or between two surfaces, may make use of two or more different types of seal means enumerated above. Such combinations may include a fibrous pad seal with a fluid seal, a frictional seal, or a web seal. An additional example may take the form of a fluid seal with a web seal, with or without a fibrous pad seal. Further combinations may prove fruitful for various situations.

A moving hearth, to provide a complete enclosure around the combustion chamber, will require several sections of seals. Several will have a horizontal orientation. Others will follow a vertical line. A seal between two moving hearth, where that occurs, also lies along the horizontal. As a result, a complete enclosure may use different types of seal or combinations of seal depending upon the particular needs and requirements of each section of seal.

Employing an incinerator to burn refuse leads to an effort to improve the atmospheric quality in or around the unit itself. The incinerator may have a substantially

enclosed combustion chamber with an inlet for the introduction of refuse and an outlet for the egress of the products of combustion. The chamber may also comprise floor means for supporting burning refuse and wall means, located above the floor means and forming a substantially closed perimeter with the floor means. Together, the wall means and the floor means provide the substantially enclosed chamber. A method of improving the atmospheric quality around or in the incinerator comprises moving the floor means along a substantially predetermined path relative to the wall means. The method further involves substantially preventing the passage of gas between the wall means and the floor means along at least a portion of the perimeter when the motion means moves the floor means generally along the path but with substantial deviations from the path.

In particular, substantially preventing the passage of gas between the wall means and the floor means may entail holding a substantially fluidized, nongaseous material on one of said floor means and said wall means along at least a portion of the perimeter between the floor means and the wall means. An immersion device is held to the other of the floor means and the wall means along the indicated portion of the perimeter, and located at least in part, in the material as the floor means is moved along its substantially predetermined path.

As an alternative to using an immersion system, a substantially flexible, gas-impervious, heat resistant web of material may be attached both to the floor means along at least a portion of the perimeter and to the wall means along the specified portion of the perimeter. Or, a compressible, resilient substantially gas-impervious, heat-resistant pad of material may be retained between the floor means and the wall means along at least a portion of the perimeter. A further choice of method affixes a sheet of substantially flexible, gas-impervious, form-retaining material to one of the floor means and the wall

means along at least a portion of said perimeter; and urges this material against the other of the floor means and the wall means.

As discussed above, the floor means may comprise first and second floor sections meeting along a substantially linear path. Improving the atmospheric quality around or in this type of incinerator first comprises moving the first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to the wall means. The passage of gas is substantially prevented between the first and second floor sections along at least a portion of the linear path when the motion means moves the first and second floor sections relative to each other

Stated in general terms, the method of improving the atmospheric quality on at least one side of first and second surfaces meeting along a substantially linear path comprises moving the first surface along a substantially predetermined path relative to the second surface. The method also comprises substantially preventing the passage of gas between the first surface and the second surface along at least a portion of the substantially linear path when the first surface moves generally along the predetermined path but with substantial deviations from the predetermined path relative to the second surface.

Again, the methods of improving the atmospheric quality on at least one side of two surfaces of in an incinerator with two floor section may adopt the particular techniques discussed above for an incinerator with an enclosed main chamber. Instead of a relationship with a wall means and a floor means, the particular methods here will consider either two sections of a floor means or two surfaces in general.

The actual method used at a specific location may combine two, three, or more of the techniques discussed above depending upon the conditions and requirements encountered and imposed there. Furthermore, a complete enclosure such as an incinerator

chamber may well utilize different techniques at different sites of the equipment. Especially is this so where the relevant wall, floor, floor section or surfaces meet along a nonhorizontal line as opposed to a horizontal orientation. Naturally, sealing the juncture between two pulsing floor sections, such as hearths, may require different methods than between other surfaces.

On occasion, the combustion conditions of the incinerator may allow air to enter the main chamber through the space between the floor and the wall. This will permit the use of a positive air pressure to keep the gasses of combustion from leaking out into the environs especially in the case of a failure of the natural and induced drafts. In this case, the incinerator will comprise a substantially enclosed combustion chamber with an inlet for the introduction of refuse and an outlet for the egress of the products of combustion. Further the chamber will comprise floor means for supporting burning refuse and wall means, located above the floor means and forming a substantially closed perimeter with the floor means, for, with the floor means, providing the substantially enclosed chamber. An improved incinerator will comprise (a) containment means, coupled to the wall means and the floor means on the exterior of the substantially enclosed chamber and extending along at least a portion of the perimeter for holding an increased gas pressure. Specifically, the pressure that can be retained should exceed that (1) within the substantially enclosed chamber and (2) on the exterior of the substantially enclosed chamber. The improved incinerator will also comprise a seal means, coupled to the containment means, that will maintain the gas pressure within the containment means and at the portion of the perimeter at which the containment means sits at a level greater than that (1) within the substantially enclosed chamber and (2) on the exterior of the substantially enclosed chamber. The

increased air pressure will force air into the main chamber and keep combustion gasses from passing in the opposite direction into the incinerator's environs.

The increased air-pressure seal described above may also find use in combination with other types of seals previously mentioned. The presence of the other seals will actually result in a substantial blockage of and reduction in the amount of air entering the combustion chamber through the seal. In fact, the other types of seals may reduce the amount of air thusly introduced to minimal or even negligible levels.

The chamber may further include motion means such as the pulsing mechanism shown in Basic's U.S. patent 4,475,469, coupled to the floor means and the wall means. The motion means, as before, moves the floor means along a substantially predetermined path relative to the wall means. In this case, the seal means increases the gas pressure within the containment means and at the portion of the perimeter when the motion means moves the floor means generally along the predetermined path but with substantial deviations from that path.

Improving the atmospheric quality around an incinerator can also occur where the combustion chamber may, without excessive deleterious effects, accept outside air from a seal. In this case, the method involves a substantially enclosed combustion chamber with an inlet for the introduction of refuse and an outlet for the egress of the products of combustion. The chamber itself comprises floor means for supporting burning refuse and wall means, located above the floor means and forming a substantially closed perimeter with the floor means, for, with the floor means, providing the substantially enclosed chamber. The method of improving the atmospheric quality on the outside of the incinerator comprises increasing the gas pressure within a containment means, coupled to the wall means and the floor means on the exterior of the substantially enclosed chamber

and extending along at least a portion of the perimeter. Specifically, the air pressure in the containment means should be increased to a level greater than that (1) within the substantially enclosed chamber and (2) on the exterior of the substantially enclosed chamber and at the portion of the perimeter. Naturally, the gas pressure should be maintained at this elevated level to force the gas into the chamber rather than the other way.

Again, many benefits result from moving the floor means along a substantially predetermined path relative to the wall means. Nonetheless, the gas pressure should be maintained at the increased level in the containment means when the motion means moves the floor means generally along the path but with substantial deviations from it.

## BRIEF DESCRIPTION OF THE FIGURES

FIGURE 1 gives a side elevational diagram of a water-wall incinerator system having two stages of reburn.

FIGURE 2 provides a diagram of a main incinerator chamber showing the location of seals around a pulsing hearth.

FIGURE 3 has an isometric view of the seals around a pulsing hearth.

FIGURE 4 gives an isometric view of a hearth with a metal sliding side seal.

FIGURE 5 shows an end view along the line 5-5 of the hearth of FIGURE 4 with a metal sliding friction seal.

FIGURE 6 illustrates a side friction seal with a spring holding the metal seal against the pulsing hearth.

FIGURE 7 shows an alternate to FIGURE 6 in which the frictional seal points downward from the incinerator outer wall and has a compression spring urging it against the hearth.

FIGURE 8 also gives a friction seal similar to that of FIGURE 6 but anchored to the hearth and moving against the incinerator exterior wall.

FIGURE 9 provides a view of an upper, loader end, horizontal cross frictional seal.

FIGURE 10 gives a diagrammatic view of a lower, ash-end, horizontal cross friction cross seal.

FIGURE 11 diagrams a vertical friction seal.

FIGURE 12 gives an exterior side elevational view of the ash end of a pulsing hearth using a sliding vertical seal.

FIGURE 13 provides a cross-sectional view along the line 13-13 of the vertical seal of FIGURE 12.

FIGURE 14 provides a cross-sectional view along the line 14-14 of the vertical seal of FIGURE 12.

FIGURE 15 illustrates a vertical frictional seal urged against the pulsing hearth by a tension spring.

FIGURE 16 illustrates a vertical frictional seal similar to that of FIGURE 12 but using a compression spring.

FIGURE 17 shows a bottom, ash-end horizontal, flexible friction cross seal.

FIGURE 18 diagrams a side, horizontal, frictional seal with temperature sensing and fluid cooling.

FIGURE 19 gives an end view of a pulsing hearth using aside, horizontal, frictional seal with temperature sensing and air cooling.

FIGURE 20 shows a movable, side, horizontal, frictional side seal taking into consideration the vertical motion of the hearth as it pursues its pulsed path.

FIGURE 21 shows an inflatable bladder-type, loader-end, horizontal top cross seal.

FIGURE 22 gives a bladder-type seal similar to that of Figure 21 but containing particulate material.

FIGURE 23 illustrates an ash-end, bottom, inflatable horizontal cross seal.

FIGURE 24 provides an enlarged view of the inflatable seal of FIGURE 23.

FIGURE 25 contains an isometric view of a flexible web used as a side, vertical seal.

FIGURE 26 gives a top plan view along the line 26-26 of the vertical, side web seal of FIGURE 25.

FIGURE 27 gives a diagrammatic view of a side, horizontal water seal.

FIGURE 28 diagrams a loader-end, upper, horizontal, water cross seal.

FIGURE 29 gives a diagrammatic view of an ash-end, horizontal, bottom cross seal using water.

FIGURE 30 provides an isometric diagram of a side, vertical water seal.

FIGURE 31 gives a top plan view along the line 31-31 of the water vertical seal of FIGURE 30.

FIGURE 32 shows a horizontal, ash-end, bottom water cross seal using a flexible web submerged in the water.

FIGURE 33 gives an enlarged view of the horizontal, ash-end, bottom cross water seal of FIGURE 32.

FIGURE 34 shows a bottom, ash-end, horizontal, cross, water seal with a rigid blade of metal submerged in the water trough.

FIGURE 35 gives an enlarged view of an upper, loader-end, horizontal, water cross seal using a rigid sheet of material in the water.

FIGURE 36 gives a view of an upper, horizontal, cross water seal similar to that of FIGURE 35 using a flexible web immersed in the water.

FIGURE 37 provides a view of an upper, loader-end, cross, horizontal water seal using a rigid sheet of metal immersed in the water.

FIGURE 38 gives an enlarged view of an upper water cross seal using a flexible web in the water.

FIGURE 39 shows a horizontal, cross seal at the ash end of the pulsed hearth using possibly aerated sand for the sealing medium.

FIGURE 40 portrays a cross seal at the ash end of the pulsed hearth similar to that of FIGURE 39 but using a possibly aerated bubble-type material for the sealant.

FIGURE 41 has a front-end, horizontal, cross seal using aerated sand for the sealant.

FIGURE 42 also shows a front-end, horizontal, seal but using a possibly aerated bubble sealant.

FIGURE 43 portrays a horizontal, cross water seal between two pulsing hearths.

FIGURE 44 gives an enlarged view of a horizontal, water seal between two pulsing hearths.

FIGURE 45 displays a front-end, horizontal cross seal that makes use of water as the sealant, as in FIGURE 43, and a pad of compressible, high-temperature resistant compressible pad of fibrous material for additional isolation.

FIGURE 46 illustrates a front-end seal very similar to that of FIGURE 45 but with a recess guide provided for the compressible sealing pad.

FIGURE 47 portrays a horizontal, cross water seal between two pulsing hearths with flexible webs inserted into the water for isolation.

FIGURE 48 shows a horizontal, cross seal between two pulsing hearths which uses a flexible web for sealing, a compressible fibrous pad for isolation, and also optionally water.

FIGURE 49 shows, in a side elevational view, the water trough arrangement for the side seals for a two-hearth main incinerator main chamber.

FIGURE 50 gives a top plan view of the horizontal water troughs for interconnected side and upper cross seals.

FIGURE 51 shows the water troughs along the line 51-51 of Figure 50 at the corner of an upper cross water seal connected to a side water seal.

FIGURE 52 illustrates an upper, horizontal, water cross seal using a flexible web connected to the blade of a horizontal, water side seal.

FIGURE 53 illustrates a horizontal, upper water cross seal using a rigid sheet of metal connected to the blade of a horizontal, water side seal.

FIGURE 54 provides an isometric view of a water trough arrangement for a horizontal side seal.

FIGURE 55 gives a cross-sectional view along the line 55-55 of FIGURE 54 of a water trough for a horizontal side seal.

FIGURE 56 provides a cross-sectional view of a main chamber wall with a side, horizontal water seal.

FIGURE 57 illustrates, in an end view, partially in cross section, the side wall and horizontal water trough arrangement for a three-tiered pulsed hearth main combustion chamber.

FIGURE 58 gives a cross-sectional view of a water trough for a horizontal side seal similar to that of FIGURE 55 but further including a fibrous pad to at least partially insulate the water seal from the incinerator fire and ash.

FIGURE 59 provides a view of a trough similar to that of FIGURE 58 but where the fibrous pad has a recess in the overhanging incinerator wall in which to travel as the hearth pulses.

FIGURE 60 shows a side water seal very similar to that of FIGURE 59 but further including a web in the trough to insure the seal.

FIGURE 61 shows an interior trough for a horizontal side seal using water.

FIGURE 62 provides a cross-sectional view of the interior trough of a horizontal side seal utilizing sand as a semi-fluid type of sealant.

FIGURE 63 gives a cross-sectional view of a side seal trough similar to that of FIGURE 62 but including an air inlet for fluidizing the sand.

FIGURE 64 shows the interior trough of a side seal similar to FIGURE 62 using a solid bubble-type material as the semi-fluid sealant.

FIGURE 65 shows the interior trough of a side seal similar to FIGURE 64 but employing an air inlet to help fluidize the bubble-type material.

## DETAILED DESCRIPTION

Figure 1 shows generally at 75 a modern incinerator system employing the two pulse hearths 76 and 77 and the two stages of heat recovery composed of the water wall 78 and the boiler 79. To begin the process, solid bulk refuse enters the hopper 82. From there the ram loader 83 pushes it into the main combustion chamber indicated generally at 84. In the main combustion chamber 84, the refuse falls onto the first pulsed hearth 76 where it burns with the assistance, if necessary, of additional heat from the burner 85. The first

pulsed hearth 76 moves the burning refuse across its surface and away from the entrance to the main chamber 84 in the fashion of the Basic U.S. patent 4,475,469 discussed above. Eventually, the burning refuse falls onto the second pulsed hearth 77 where incineration continues. The blowers 86 and 87 provide air for the combustion process.

While the refuse burns, it naturally releases heat energy. Part of this energy enters the water wall 78 to heat the fluid contained in it. The heated fluid from the membrane-tube water wall 78 may then travel along the conduit 88 to the boiler 79. Steam removed from the top of the boiler 79 may find constructive use elsewhere either in the incinerator 75 or elsewhere as in electrical generation or for heating.

The refuse, after completing its burning, falls from the second pulsed hearth 77 into the ash pit 89 which contains water. The scoop 90, pulled by the cable 91 attached to the motor 92, travels along the track 93. It then dumps the ashes into the hopper 94, and from there it falls into the bin 95.

The gaseous products of combustion pass from the main incinerator chamber 84 into the passageway 102. There, they join gasses from the raw refuse in the hopper 82, which under the action of the blower 103 travel along the conduit 104. This removes and will serve to destroy the foul aroma of the raw refuse.

The gasses from the passageway 102 then enter the first reburn stage 108. There, with the controlled assistance of the auxiliary fuel burner 109, if necessary, and the air fan 110, they continue to burn at an elevated temperature to destroy combustible moieties in the gas stream. As the incineration of the gaseous products of combustion proceeds, the gasses pass to the second reburn section 111 where they continue to burn. While doing so, they receive controlled amounts of additional air from the blower 112.

After the second reburn stage 111, the gasses could, if a problem existed in the system, escape through the safety relief stack 117. In normal operation, however, the damper 118 keeps the stack 117 closed, and the gasses travel to stage 4 of the system 121. There they receive the addition of cooled gasses from the conduit 122. The cooling of the combustion gas stream thus effected lowers its temperature below the point where various ingredients in the gasses, such as zinc, can exist in the vapor state. These components thus precipitate out in the cooling process and, accordingly, do not condense on the tubes of the boiler convection 79 when the combustion stream enters it. As the somewhat cooled gasses travel through the boiler 79, the give up additional heat for further useful purposes. As discussed in the first Basic patent U.S. 4,438,705 listed above, the first and second reburn stages 108 and 111 intervene between the water wall 78 and the boiler 79. This permits sufficient heat to remain in the gasses in the two reburn stages 108 and 111 to achieve full burning of the combustible elements of the gas stream.

After exiting the boiler 79, the gas stream enters the economizer 123. There, it preheats feed water that will find use in the boiler system of the water wall 78 and the boiler 79. Accordingly, the economizer saves further heat energy from the combustion process and feeds it back into the water that will pas through the system. This saved heat adds to the steam and electrical generation of the incinerator system 75.

From the economizer 123, some of the gas travels along the conduit 124 under the action of the blower 125. This gas, of course has given up much of its heat content in the boiler 79 and the economizer 123 and thus has a lower temperature than when it entered these latter components. Thus, after traveling along the conduit 122, it enters the stage 4 area 121 and lowers the temperature of the gas stream passing from the second reburn tunnel 111 as discussed above.

The remainder of the gas stream from the economizer 123 passes along the conduit 132 to the heat exchanger 133. The blower 134 passes outside air through the exchanger 133 to further cool the gas stream. At this point, the gasses have given up a substantial portion of their heat in the boiler 79 and in the economizer 123. However, the temperature of the gas stream may still remain above the vaporization temperature, or the dew point, of acids contained in it. The heat exchanger 133 reduces the temperature to a point, generally below about 400° F. where the acids in the gas stream actually condense into the liquid state. This allows their neutralization by combining with a base and their removal in subsequent treatment, as discussed immediately below.

The exhaust gasses then receive dry lime and activated carbon along the conduit 135 to neutralize the condensed acids and remove pollutants, respectively. The gas stream with these added materials then enters the baghouse filter and dry acid gas scrubber 138 which separates the gas from the particulate matter. The solid matter falls into the bin 141 where it awaits removal.

The cleaned gas from the baghouse 138 travels along the conduit 142. At this point, with actual refuse in an operating incinerator, no gas enters the exit conduit 142 from the conduit 143 because the motor 144 has closed the damper 145 to direct the combustion gasses into the baghouse 138.

The gasses in the conduit 142 are pulled by the induced-draft fan 148, and they escape into the atmosphere through the main exhaust stack 149. The continuous emissions monitor system 150 permits the evaluation of the discharge gasses for various combustion products possibly contained in the gasses exiting the stack 149. These could include the particulates, the carbon compounds, the nitrous oxides, the sulfur emissions, as well as others. The exact task of the monitor system 150 depends upon the particular case

involved including such factors as the refuse undergoing incineration, the siting of the incinerator, and others.

During the startup operations, the incinerator 75 uses natural gas in its burners 85 and 109 to heat it to its operating temperature where it can start receiving actual refuse. During this warming time, the exhaust gas stream contains virtually no components that the baghouse 138 need remove. Under these limited conditions, the damper 145 may fully open and allow exhaust gasses to bypass the baghouse 138 and pass through the conduit 143 directly to the conduit 142 and the exhaust stack 149. However, when the incinerator 75 has reached its operating temperature, the damper 145 closes, and the exhaust gas stream enters the baghouse 138 as described above.

Figure 2 shows the single pulsed hearth 158 located within the main combustion chamber 84. The inflatable bag 159 attached to the yoke 160 pushes against the stop 161 to provide the pulsed motion, indicated by the arrow 162 in the various figures, and the vector diagram 163 in Figure 3 and as described in Basic's patent U.S. 4,475,469. The blower 165, acting through the conduit 166, provides a positive air pressure around the pulsed hearth 158 and into the main combustion chamber 84. Depending upon the geometry of the gap between the hearth 158 and the walls of the chamber, this positive air pressure may suffice to effectively seal the outside of the main chamber 84 from the gasses contained within it.

However, many situations may indicate the desire or even need for a more positive seal than that afforded by positive air pressure alone. For instance, the positive pressure may introduce unacceptably high levels of air within the combustion area itself. Thus, a physical seal around the pulsed hearth may become appropriate. Such a seal, to prove effective, must accommodate the motion of the hearth as it moves through its pulsed

motion. This becomes particularly important in light of the fact that the hearth's motion may not be absolutely predictable. Thus, the air bags or other impelling device may not always produce exactly the same or even symmetric motion. Further, the placement of the refuse's weight may vary from load to load and cause substantial deviations of the hearth's motion from its norm.

As seen in Figures 2 and 3, the isolation of the combustion area from its surroundings will entail several different sections of positive seal. The nature and structure of each seal portion will depend upon its location relative to the hearth and the types of seals used at the other positions on the hearth. Thus, the hearth 158 will have the upper, or loader-end, horizontal cross seal 167, the side horizontal seals 168, the side vertical seals 169, and the lower, or ash-end, horizontal cross seal 170. Positive seals in these locations may find use in place of or in addition to the air seal discussed immediately above. Additionally, the following discussion often focuses on a single section of the positive seal in an incinerator. Naturally, all of the sections will generally connect to each other and form a closed perimeter to achieve gaseous isolation of the interior of the combustion chamber from the exterior. Also, the following discussion may refer to a particular structure as finding use at one location of the seal. Often, with very little or no modification, the same structure may well find use at some other location of the hearth. In such cases, the remarks for the seal at one of the locations generally apply with equal force at its other installations.

One type of positive seal, seen in Figures 4 through 19, involves affixing a piece of springy metal such as sheet spring steel to either the pulsing hearth 158 or the exterior wall. The same piece of metal is urged against the other surface to create a frictional, sliding seal. An elementary seal of this type appears generally at 173 in Figures 4 and 5.

There, the sheet of corrosion-resistant spring stainless steel 174 has assumed a generally "Z' shape. In Figure 5, the first leg 175 of the Z-shaped metal strip 174 firmly attaches to the wall structure indicated diagrammatically at 176. The middle section 177 of the Z extends between the wall surface 176 and the hearth 158. Finally, the last section 178 forms the bend 179 which actually rests against the hearth 158 itself. As the hearth 158 moves through its pulsed motion, the bend 179 in the metal strip 174 slides along the hearth. The strip 174 is configured and attached to the wall 176 so that the bend 179 is continually urged against the hearth 158. A lubricant such as molybdenum disulfide grease or dry aerosol lubricant helps minimize wear on the bend 179 and the hearth resulting from the one sliding along the side of the other.

Accordingly, because of the urging resulting from the springiness of the metal strip 174, the bend 179 remains in contact with the hearth 158 as it moves through its range of motion. Of equal importance, the hearth 158 may, due to the factors listed above, have a slight side-to-side, or lateral, component of motion as it undergoes its pulsed motion. In other words, the hearth 158 may move slightly towards and away from the wall surface 176 as it is pulsed. Nonetheless, the springiness of the steel strip 174 accommodates this motion, and the strip's bend 179 remains in contact with the hearth 158 throughout its range of motion to provide a continuous positive seal.

As indicated above, the seal 173 provided by the steel strip 174 acts in two ways. First, it restricts, minimizes, and possibly prevents the gasses of combustion over the hearth 158 from entering the exterior environs of the incinerator. This, of course, has importance because the gasses in the main combustion chamber may prove particularly unhealthful for workers or others present near the incinerator. Especially is this the case where the incinerator sits within an enclosed room as often happens.

Second, the seal 173 restricts the passage of outside air *into* the incinerator. As the patents of John Basic listed above clearly establish, achieving thorough, environmentally acceptable burning of refuse involves the strict control of all factors of incineration both in the main chamber and in the reburn tunnels. This includes, in particular, the amount of air introduced into the main chamber; the locations from where the air enters the chamber; and the temperature of the air thusly introduced. The seal 173 serves to minimize air entering around the side of the hearth and deleteriously affecting the quality of the incineration occurring inside. This aspect of the seal 173 and the other varieties discussed below has especial significance in light of the fact that the main combustion chamber (as well as the reburn tunnels) should and usually do operate at a negative pressure compared to the surrounding environment. This negative pressure may result from a natural draft that accompanies burning or an induced draft when present. Either or both of these sources of draft (i.e., negative pressure in the main combustion chamber) assure the passage of the combustion gasses in the proper direction towards the stack. This draft would pull in air from around the hearth without the intervention of the seals discussed here and deleteriously affect the conditions of combustion.

On the other hand, a positive partial pressure may occasionally develop within the combustion chamber. This may result from the failure of any natural draft and the induced draft fan. Further, a "blooming" or rapid incineration of highly volatile materials within the refuse may cause a substantial increase in the pressure in the main chamber. Nonetheless, the positive seals discussed here can help prevent the gases within the combustion chamber from escaping to the exterior where they have the potential to effectuate substantial harm.

Figure 6 shows a modification of the side, horizontal, frictional seal in which the nut and bolt pair 184 holds the metal-strip seal 185 to the wall 176. The strip 185 again makes contact with the hearth 158 to seal against the passage of gas. In Figure 6, however, the tension spring 187 stretches between the strip 185 and the floor 188. The force of the tension spring 187 pulls down on the strip 185 to assure its firm contact with the hearth 158 as the latter moves through its pulsed movement. Naturally, the incinerator construction should usually allow access to the spring 187 and its connecting cable 188 for occasional servicing or replacement.

Figure 7 shows a slight modification from the arrangement of Figure 6. Here, the strip 192, anchored by the bolt 193, angles downward as it extends towards the hearth 158. This allows the compression spring 194 to push it upwards into firm engagement with the hearth 158. Figure 8 shows a further modification in which the bolt 195 holds the strip 196 anchored to the hearth 158 itself. The strip 196, in turn, slides against the wall 176 to provide the frictional seal. Here, the tension spring 197 holds the strip firmly against the wall 176 to provide a secure seal. As with the other frictional seals, a lubricant should be used to avoid excessive wear of the spring metal strip. Further, the incinerator construction should allow access to permit servicing of the various seal components. Additionally, the spring should desirably sit on the side of the seal remove from the incinerator's fire. This, of course, serves to protect it from the destructive influence of the burning environment.

Figure 9 shows the spring metal strip 201 used as the upper, loader-end, horizontal frictional seal. The bolt 202 holds the strip 201 against the incinerator loader-end wall 203 where it rests against the shelf 204 attached to the hearth 158. The tension spring 205 pulls the strip 201 into a firm engagement with the shelf 204 to assure a reliable seal. The shelf 204 will have a location on the hearth 158 in line with the strips 165 of Figure 6, 192 (of

Figure 7), or 196 (of Figure 8) to provide a continuous seal around the front-end corners of the hearth. This alignment appears diagrammatically in Figures 3.

Similarly, Figure 10 has a lower, ash-end, horizontal frictional seal making use of the spring-metal strip 208 in frictional contact with the bottom of the hearth 158. The bolt 209 attaches the strip 208 to the bottom surface 210, and the tension spring 211 assures a sealing contact of the strip 208 with the hearth 158.

Figure 11 diagrams the use of the metal strip 215 as a vertical side seal near the ash end 216 of the hearth 158. Again, the strip 215 has a frictional, sealing contact along the line 217 with the hearth 158. The top 218 of the line 217 connects to the horizontal side seals 185, 192, and 196 of Figures 6, 7, and 8 respectively. The bottom of the seal line connects up to the bottom, ash-end, horizontal seal 208 of Figure 10 to again provide a closed perimeter.

Greater details of a vertical, frictional sliding seal appear in Figures 12 to 14. There, the strip of spring sheet metal 223 has the short leg 224 which slides against the side of the hearth 225.The bolts 228 attach the strip 223 to the bracket 229 held by the bolts 230 to the post 231.The bracket 229 keeps the strip 223 against the side of the hearth 225.

Figure 15 shows the hearth 225 moving to the right as indicated by the motion arrow 162. The strip seal 236, in contact with the hearth, is held to the post 237 along with the bracket 238 by the bolt 239. The tension spring 240 connects to the plate 241itself attached to the post 242. The other end of the spring 240 couples to the loop 243 affixed to the metal strip 236. The tension of the spring 240 keeps the strip 236 in firm contact and thus a sealing relationship with the hearth 225 as the latter travels through its pulsed motion 162. The sliding strip seal 236 in Figure 16 differs from that in Figure 15 only in

having the compression spring 245 urging it against the hearth 225. In turn, the bolt 246 anchors the spring 245 against the outer wall 247. The drawings of Figures 15 and 16 represent views taken from above and looking down on vertical, sliding seals. The same drawings can well represent \bottom cross seals with the view taken from the side. The same general construction works in both instances.

Figure 17 shows a modified structure for the strip 251 of flexible, spring steel used as the frictional, sliding seal. There, the strip 251 assumes a somewhat sigmoid configuration which allows it a contact with the hearth at its upper curve 252 and a contact with the stationary structure 253 at its lower curve 254. The bolt 255 anchors the strip 251 to the angle bracket 255 itself attached to the shelf 257. Lastly, the bolt 258 affixes the shelf 257, and thus the strip 251, to the stationery structure 253.

As suggested above, the curved configuration of the strip 251 allows it in effect to provide two sliding frictional seals. The first seal occurs at the uppermost curved portion 252 where the strip 251 contacts the hearth 158. The second seal occurs at the lowermost curved portion 254 where the strip 251 slides along the stationery structure 253. Thus, the gasses of combustion sit in the area 259 where they cannot affect the external area 260 away from the combustion fire or the remaining structure of the strip seal itself. Additionally, squeezing the strip 251 between the hearth 158 and the stationery structure 253 helps assure a tight and sure seal. Specifically, the metal strip 251 of spring steel, with its curved structure, must be squeezed or flattened to fit in the space between the hearth 158 and the base structure 253. When finally placed in this location, the springiness of the steel attempts to undo the squeezing that allowed its placement in this location. This tendency of the steel strip 251 to return to its former configuration results in its pressing against the hearth 158 and the base 253 to provide the two seals mentioned above. As

always with a sliding or friction seal, a dry lubricant, typically molybdenum disulfide, at the points of contact of the seal with the structures will extend the life of the seal and reduce required maintenance.

Further protection for the strip seal 174 appears in Figure 18. The nozzle 264 sprays the cooling fluid 265 onto the strip seal 174 to cool its various sections 175, 177, 178, and 179. The fluid 265 may take the form of a liquid such as water, or a gas, such as air. In either event, the fluid 265 protects the metal seal 174 from the furnace heat occurring in the area 267 between the hearth 158 and the outer wall 176. A vast amount of excessive heat could simply destroy the seal 174 and allow the undesired effects discussed above. The heat could happen if the draft in the incinerator becomes lost and the flame tries to move externally out of the combustion chamber. But, even short of that, were the strip to heat to a temperature even below that of its destruction, the metal in the seal can still lose its springiness and thus its ability to remain in contact with the hearth 158 and block the passage of gas into or out or the furnace area 267.

The nozzle 264 receives its cooling fluid from the conduit 270 through the control valve 271. The valve 271 may simply operate manually, with the operator turning it on or off depending upon the incinerator's operation. When turned on, it provides a steady stream of the cooling fluid throughout the time that the incinerator remains in use. Alternately, the valve 271 may operate mechanically under the control of the radiating type of temperature sensor 272. When the sensor 272 determines that the temperature of the seal 174 has risen to a predetermined level, it causes the valve 271 to turn on to cool the seal 174. Otherwise, the valve 271 may remain closed. Alternately, the valve may simply open and shut intermittently such as about the time when the hearth 158 actually pulses. In any event, the fluid from the nozzle may also establish an air knife outside of the

pulsing hearth 158 to provide a barrier to keep the combustion gasses on the fire side 267 of the incinerator and the air on the outside.

In Figure 19, the source of the cooling fluid takes the form of the box plenum 273 which receives air under pressure from the blower 274. The air under pressure leaves the plenum 273 through the line of nozzles 276 arranged along the surface of the hearth 158 to cool the strip of metal 278. The blower 274 may operate continuously or submit to the control of the temperature sensor 279 similar to the mechanism shown in Figure 18. Or, the blower may simply provide the air intermittently. The air from the string of nozzles 276 also acts as an air knife similar to Figure 18. This helps to prevent the flow of gasses to or from the furnace side 267 between the mechanical seal 278 discussed here and the pulsed hearth 158.

Figure 20 shows the replaceable metal sliding seal indicated generally at 284 attached to the wall projection 285. The nut 286 screws onto the stud 287 to hold the seal 284 in place. In operation, the corner 288 of the seal 284 makes contact with and slides along the vertical metal plate 289 attached to the hearth 158 to provide the frictional seal.

As shown in the drawing, ash 290 may accumulate on the furnace side 291 of the seal 284. When this occurs, the operator, with access to the components, may simply pull down on the springy metal strip 284 to let the ashes 290 fall though to the floor. Further, if the seal strip 284 may suffer some damage from the heat, corrosion, and the like, the operator may simply unscrew the nut 286, remove the strip 284, and replace it with another one.

In Figure 21, the inflatable bag seal indicated generally at 295 acts as a horizontal frictional sliding cross seal between the hearth 158 and the wall 296. Anchored to the shelf 297, the bag 298 itself may contain air, gas, or some other fluid. The bag 298 slides along

the wall 296 as the hearth 158 moves. The inflated bag 298 should have sufficient sponginess or resilience to accommodate the vertical component of the hearth's motion as well as its horizontal component. It should also have some lubricant at its point of contact 298 with the wall 296. The surface of the bag 295 may prove self-lubricating, or it may require the application of some external lubricant as discussed above. Naturally, the material of the bag 295 should prove fire or high-temperature resistant for obvious reasons.

Alternately, the bag 295 could attach to the wall 296 and slide along the shelf 297. The type of bag shown in this figure and in the next Figure 22 may find use for any of the seals in the incinerator, including those shown in Figures 2 and 3, as well as a cross seal between multiple moving hearths. The bag indicated generally at 301 in Figure 22, rather than simply being inflated, has a filling of some solid material 302. This could include sand or solid-type solid materials such as pebbles, silica and alumina which also display fire resistance. The material 302 must provide sufficient flexibility and resilience in the bag 301 to allow it to sufficiently deform as the hearth 158 moves towards the shelf 297 and yet later return to its original shape as the two structures move away from each other. Other than that, the remarks for the bag seal 295 in Figure 21 apply to the filled bag seal 301 of Figure 22.

Figures 23 and 24 show a lower, ash-end, horizontal, cross, bladder seal generally at 304 rubbing along the bottom 305 of the hearth 158. The seal 304 includes the rubber tubing 307 attached by the bolt 308 to the adjustable support bracket 309. The adjustable bracket 309, in turn, sits in the stationary bracket 310, attached by the bolts 311 to the underlying support structure 312. The adjustment nuts 315, twisted onto the threaded rod 316 attached to the bracket 309, permit the adjustment of the height of the bladder 307.

The baggy seal shown generally at 320 appears in Figures 25 and 26.There, the bolts 321 hold the flexible, flame resistant web 322 of material to the hearth 158 and the outer wall 323. The material web 322 , of course, must have sufficient flexibility to accommodate the pulsed motion of the hearth 158 indicated by the arrow 162. As seen in particular in the vector diagram 163 of Figure 3, this motion includes, first of all, a horizontal, back-and-forth, component. Typically, the web 322 has no difficulty in accommodating the horizontal component of motion. However, the hearth 158 also has an upward component of motion as well. This vertical component imposes significant stresses on the web 322 as the hearth experiences its pulsed motion. Clearly, the web 322 must have sufficient resilience and flexibility to accommodate both components of motion. The web 322 may well wrinkle as the hearth 158 moves through its pulsed motion. However, it should have sufficient material to avoid creasing which can deleteriously affect its ability to provide its sealing function.

Figures 27 to 31 give diagrams for different types of water seals discussed in greater in the subsequent drawings. Accordingly, Figure 27, in particular, shows a side, horizontal water seal generally at 327. There, the trough 328 of water 329 attaches to the exterior wall 330. The knife blade 331, or strip of metal, attaches to, or is formed from the same piece of metal as, the cross piece 332 which in turn connects, in a fluid-tight relationship, to the hearth 158. The knife blade 331 in the water 329 provides a fluid barrier between the furnace side 333 and the exterior environment 334. As seen in the figure, the trough 328 of water 329 readily accommodates the horizontal motion of the hearth 158 into and out of the plane of the paper. However, the depth of the trough 328 also maintains the seal during the vertical motion of the hearth 158, which can generally rise four inches during its pulsed motion.

Figure 28 shows the upper, loader-end, cross, horizontal water seal generally at 340. There, the shelf 341, attached to the hearth 158, holds the blade 342 in the water 343. The trough 344 holds the water 343 and attaches to the fixed surface 345. The trough 344 should not move with the hearth 158 since that might well cause its water 343 to slosh out as the hearth 158 moves through its pulsed motion. Further, the blade 342 tilts towards the direction of the hearth's motion as indicated by the arrow 162. This helps to keep the blade 342 from scooping out water 343 from the trough 344 as the hearth 158 moves to the left as seen in Figure 28. Again, the seal 340 provides a barrier between the furnace side 347 of the main combustion chamber and the exterior 348.

The lower, ash-end, cross, horizontal water seal appears generally at 350 in Figure 29. The blade 351 attaches to the bottom of the hearth 158 and sits in the water 352 held by the trough 353. As with the prior figures, the trough 353 attaches to the stationary surface 354 so that the water 352 will not spill out as the hearth 158 jolts through its pulsed motion. Further, the blade 351 leans into the direction of motion seen from the arrow 162 to avoid scooping out the water 352 during the hearth's motion to the left in the figure.

Figures 30 and 31 show the rather unusual *vertical*, side water seal generally at 360. The difficulty with a vertical water seal results from its orientation. All of the horizontal seals employ a blade immersed in an open, horizontal trough. Obviously, that does not work for a vertical seal; a vertical open trough would simply allow all of the required water to run out of it. Accordingly, Figures 30 and 31 show an arrangement that will achieve a vertical water seal. There, the water container 361 is formed from the *three* vertical sides 362, 363, and 364 and the bottom 365. The two outer sides 362 and 364 have the lips 366 and 368, respectively, and the bottom 365 similarly has a lip as well. The

sides 362 and 364, the bottom 365, and the lips 366 and 368, as well as the lip on the bottom 365 all have a composition of a somewhat flexible, resilient, and heat-resistant material such as a suitable rubber. .

The external compression spring 373, anchored to the exterior wall 374, urges the water container 361 against the pulsed hearth 158. This urging along with the flexibility of the sides 362 and 364, the bottom 365, and their associated lips results in the sides, bottom, and lips acting as wiper blades against the hearth 158 and minimizing the passage and thus the loss of water between the container 361 along the hearth wall. Further, as the hearth 158 moves along its pulsed direction 162, the sides, bottom and lips function as wiper blades travelling across the surface of the hearth, again minimizing the loss of water.

However, in all likelihood, some water will escape from the container 361 especially during the movement of the hearth 158. To compensate for this leakage, the feed line 375 connects the container 361 to the reservoir 376. Water from the reservoir 376 replaces any water that may have leaked out of the container 361. Typically, a float or other device then makes sure that the water in the reservoir 376 stays at the level necessary to replace any water lost from the container 361.

As discussed before for other types of seals, a complete seal around the hearth 158 generally entails an enclosed perimeter of sections of seals such as those shown in Figures 27 to 31. Accordingly, an incinerator main chamber with a single pulsed hearth 158, to have a closed perimeter of water seals, will have a side, horizontal seal 327 (of Figure 27) on each side; an upper, loader-end, horizontal cross seal 340 (of Figure 28) at the loader end of the hearth 158; a lower, ash-end, horizontal cross seal 350 (of Figure 29); and a vertical, side seal 360 (of Figures 30 and 31) on each side of the hearth between the upper,

side, horizontal seal 327 on each side; and the lower, cross seal 350. Furthermore, to avoid leaks at the juncture of two seals, the water for them, if at the same level for both, should form a continuous pool as shown below with reference to Figures 50 to 53. The seals that can take advantage of a continuous pool of water include the horizontal side seals 327 and the upper, loader-end horizontal seal 340. Theoretically, it could also incorporate the side, vertical seals 360, although the leakage problems of the latter could infect the other seals.

The above discussion may seem to suggest using water seals (or any one kind of seal) for *all* of the sections of a perimeter around the hearth. Thus, Figures 27 to 31 provide a water seal for all sections of the complete hearth seal. However, that need not be the case. In particular, as discussed above, the vertical water seal 360 shown in Figures 30 and 31 inherently has a greater likelihood of leaking. Thus, the actual construction of an incinerator may utilize a water (or some other fluid) seal for all of the sections except for the vertical seal. This last seal may take the form of a frictional, rubbing seal discussed above. This seal, whatever its form, must then make tight contact with the side, horizontal and lower, cross water seals where it joins them.

Typically, the containers 328, 344, and 353, as well as the water trough discussed below, will have a composition of stainless steel to avoid corrosion from the incinerator combustion gasses. The same holds true for the blades 331, 342 and 351 as well as those in the following discussion. In particular, the combustion gasses may contain chlorine, a component of many plastics, for example. Chlorine, when it dissolves in water, produces hydrochloric acid. The stainless steel helps avoid the corrosive effect of the acid. To provide further protection, the water may contain an added base to neutralize the acid. If the combustion gasses should produce a base when dissolved, then the water in the troughs may include a neutralizing acid.

The water 329, 343, and 352 in the troughs 328, 344, and 353, respectively, provides a further important benefit. Specifically, it cools the blades 331, 342 and 351. These blades, during the operation of the incinerator, are exposed either directly or indirectly to the hot gasses of the incineration. This high-temperature environment could destroy the blades. The water cools the blades and helps avoid this destructive effect. The same remarks apply to the blades used in the water seals below. Other features of particular seals, such as heat resistant, fibrous pads may reduce this problem. However, the water does avoid the high temperatures that could harm or destroy the stainless steel blades.

Figure 32 and, in greater detail, Figure 33 show a lower, ash-end, cross horizontal seal generally at 379. A brief comparison of these drawings shows that they bear a strong resemblance to the bladder-seal installation of Figures 23 and 24. In the present case, however, the adjustable bracket 309 holds the trough 380 of water 381 which fits into the cutout 382 in the support 312. The bottom of the trough 380 includes the drain 385 with its plug to permit the removal of the water 381.

The hold-down bar 386 then attaches the flexible, gas-impermeable web 387 to the underside 305 of the hearth 158 in a gas-tight manner. The web 387 may take the form of 1/8 inch thick combination Kevlar® and Nomex® aramid fabric manufactured by the DuPont Company of Wilmington, Delaware, or equivalent. Different bags such as rayon, fiberglass Goretex and others, especially those with low micron sieves, may suffice. Other thicknesses, more or less than that given above, may work as well. The bottom portion of the web 387 then sits in the water 381 to provide a gas seal between the furnace side 388 and the exterior 389. The very bottom of the web 387 wraps around the rod weight 390 to

keep it in the water 381. As before, the bottom, horizontal cross seal 379 should align with the side, vertical seal 391 whatever form the latter may take.

The seal generally at 394 of Figure 34 resembles very closely the web water seal 379 of the prior figure. However, in this case, the seal utilizes the rigid blade 395 of stainless steel sheet metal dipped into the water 381 to provide the seal. The bar 386 keeps the blade 395 in place (without the assistance of a component comparable to the weight bar 390).

Figures 35 and 36 diagrammatically show upper, ash-end, horizontal cross water seals at 401 and 402, respectively, similar to the lower, ash-end seals of Figures 33 and 34. Both make use of the stationary trough 403 attached to the structure 404 holding the water 405. The trough cover 408 provides one side of the barrier between the furnace gas area 409 and the exterior 410. It also permits access to the trough 403 for cleaning. The cover 408 attaches to the stationary structure 412.

In Figure 35, the support plate 413 attaches to the retainer clip 414 affixed to the hearth 158. In turn, the hold-down bar 417 attaches the flexible web 418 of material, similar to that in Figure 33, to the support plate 413. The rod weight 419 holds the web 418 in the water 405. In Figure 36, the stainless steel plate 422 takes the place of the web 418 of the prior figure and is held to the support plate 413 by the bar 417. As with other steel plates used as a cross seal at either the loader end or the ash end, the plate 422 should make a relatively small angle relative to the horizontal. This will help avoid having the plate 422 push the water 405 out of the trough 403 as the hearth 158 goes through its pulsed motion 162. The web 418, as is typical with web water seals, seems to displace less water during the hearth's pulsing than rigid-blade water seals.

Figures 37 and 38 show an installation of a loader-end, horizontal, cross water seal generally at 425 and 426, respectively. In both of these, the support structure 427 holds the trough 428 in a stationary position so that the water 429 remains inside. The pulsed hearth 158 has the support plate 430 attached to it by the clip 431. The bolt 434 holds the retainer strip 435 and, in Figure 37, the stainless steel blade 436 to the support plate 430. The blade 436 in the water 429 provides the seal between the furnace side 437 and the exterior 438. The seal 425 should align with and connect to the side, horizontal seal indicated by the horizontal line 439. This relationship receives discussion with regards to Figures 50 to 53 below. The seal cover 440 plate rotates about the hinge 441 to permit access to the water 429.

In Figure 38, the bolt 434 and the retaining strip 435 grip securely onto the flexible, flame resistant strip 442 held down into the water 429 by the weight rod 443. The strip 442 in the water 429 provides the seal between the furnace environment 437 and the exterior 438. Otherwise, the remarks above concerning Figure 37 apply here.

Figures 39 and 40 generally show the lower, ash-end, horizontal cross seals 447 and 448, respectively, which are almost identical to the water seal 394 of Figure 34. However, the seals 447 and 448 find use in the situation where the furnace gas, located at 451, may react deleteriously with the water 381 in the seal 394. Such a situation may occur where the refuse contains a substantial number of disposable baby diapers, for instance. The absorbent, polymer gel in those diapers vaporizes and can, when dissolved in the water 381, form a colloidal gel with the water, solidifying it. This would clearly interfere with the concept and operation of a "fluid seal" discussed above.

Accordingly, instead of water as the sealing medium, the trough 380 of Figure 39 utilizes the sand 452 to provide the seal. Similarly, Figure 40 shows the bubble medium

453 as the fluid. In the latter case, the bubbles may constitute pebbles or particles of alumina or silica. The fluid media 452 of Figure 39 and 453 of Figure 40 sit on the fine mesh screen 456 welded to the trough 380. The air tubes 457 lie on top of the trough 380 and below the screen 456. The tubes 457 provide air to the space 458 between the screen 456 and the bottom of the trough 380. The air then passes upward through the screen 456 to help fluidize the media 452 and 453. The tubes 457 may provide the air continuously, intermittently, or not at all, depending upon the nature of the refuse undergoing incineration. In fact, Figures 62 and 64 show the use of such media without passing air or any other gas through them whatsoever. However, when the tubes 457 supply air intermittently, they may do so in a timed relationship with the pulsing of the hearth 158. Thus, they may operate for a period starting just before the pulse and ending just afterwards. This would have particular utility since the pulse of the hearth may actually cause a slight increase in the internal gas pressure in the main combustion chamber. The reduction or possible loss of the desired draft during this particular period suggests using the air tubes 457 during this time.

When the tubes 457 do provide air in the trough 380, they provide a fluid flow on the outside of the hearth 158. This can act as an air knife to help prevent the escape of combustion gasses from the furnace area 451 similar to the fluid streams of Figures 18 and 19.

Figures 41 and 42 similarly show the seals generally at 461 and 462, respectively, that appear very similar to the seal 402 of Figure 36. Here, the trough 403 has the fine screen mesh 463 welded to it and overlying the tubes 464. The tubes 464, in turn, introduce air or gas into the space 466 underlying the screen 463. The sand 467 sits on the screen 463 in Figure 41, and the bubble material 468 fills the space in Figure 42. In either

case, the steel blade 422 remains in the sand 467 or the bubble material 468 to provide the seal. As with Figures 39 and 40, the tubes may introduce gas into the space continuously, intermittently, or not at all, depending upon the circumstances, to fluidize further the media 467 or 468. As with Figure 36, the seals 461 and 462 typically fall on the line 410 of and connect to the side horizontal seals.

An incinerator, as shown in Figure 1, may have a multiplicity of the two hearths 76 and 77 or even more. Completely enclosing the main chamber's interior also requires a seal between each of the two hearths that adjoin one another. This type of seal between two adjacent hearths must actually work under more rigorous condition: first, both of the hearths undergo pulsing; second, the pulsing repetition rate generally varies for the two hearths, with the lower hearth usually pulsing less frequently than the higher hearth; and third, the two hearths may suffer somewhat differing deviant paths from their respective norms. A water seal between two hearths actually combines a lower, ash end horizontal seal on the upper hearth with an upper, loader-end horizontal seal from the lower hearth. Each of these seals extends a blade into a trough of water attached to some nonmoving object. These intermediate water seals receive discussion below with regards to Figures 43 to 48 and 57. Alternately, the seal between two hearths may take some form of the seals shown above other than a water seal. The same remarks would apply to these different seals between hearths.

Figure 43 and, in greater detail, Figure 44 display the two hearths 158a and 158b operating in tandem. They pulse generally in the directions 162a and 162b, although the frequency and strengths of the pulses for the hearths 158a and 158b typically vary from each other. This situation may well accord with the twin hearths 76 and 77 of Figure 1. Or, it may occur when the main incinerator chamber has three or more hearths as in Figure 57

below. In actuality, the intermediate, horizontal, cross seal generally at 475 may find use between any two pulsing hearths.

As seen from Figures 43 and 44, the seal 475 not surprisingly combines a lower, horizontal, ash-end type seal, indicated generally at 476, with an upper, loader-end, horizontal type seal shown generally at 477. The former type of seal appears in Figure 34, while Figure 37 shows the latter type. In Figure 43, the upper hearth 158a has the attached blade 478 in the water 479 which is held in the trough 480 affixed to the *stationary* surface 481. Similarly, the lower hearth 158b has the attached blade 485 also sitting in the water 479. The water 479 with the two immersed blades 478 and 485 provides the seal between the furnace environment 486 and the exterior 487.

For the upper hearth 158a, the seal provided by the blade 478 aligns with the vertical, side seal location shown by the dashed line 488. Similarly, for the lower hearth 158b, the seal 477 of the blade 485 aligns with the hearth's upper, side, horizontal seal indicated by the dashed line 489. And, the two blades 478 and 485 lie in the same horizontal plane as established by the seal line 489. These relative locations of these seals provide a closed perimeter and thus a continuous seal across the two pulsing hearths 158a and 158b.

Figure 44 shows in detail that the water trough 480 sits upon the stationary structure 481 and makes no contact with either the upper hearth 158a or the lower hearth 158b. This keeps the motion of the hearths from causing the water 479 to overflow the trough 480.

Figure 45 portrays the intermediate, horizontal, cross seal generally at 490 between the two hearths 158a and 158b that is virtually identical to the seal 475 of the prior figure. Again, the trough 491 sits upon the stationary surface 492 and holds the water 493. The

blades 494 and 495 from the upper and lower hearths 158a and 158b, respectively, sit in the water 493 to provide a water seal. However, Figure 45 also includes the additional seal 496 formed from the compressible, resilient, fibrous pad 497 between the hearths 158a and 158b. The alloy pins 498 anchor the pad 497 to the steel plate 499 covering the refractory 500 of the lower hearth 158b. In turn, the fibrous pad 497 pushes and rubs against the steel plate 502 on the bottom of the refractory 503 of the upper hearth 158a as either or both of the hearths undergo their pulsed motions. However, the pins 498 must not have a length that will bring them into contact with the steel plate 502 of the upper hearth 158a when the movement of the hearths 158a and 158b brings them to their minimal separation from each other.

Again, a high-temperature lubricant, usually molybdenum disulfide, between the pad 497 and the upper hearth 158a facilitates the motion of the former against the latter. The lubricant is typically sprayed on both the pad 497 and the steel plate 502. The pad 497 has a symbiotic relationship with the lubricant by protecting it against the heat of the combustion fire in the main chamber 504.

The pad 497 should have a composition resistant to the high temperatures and gasses generated in the incinerator environment 504. The fibrous pad 497 should display sufficient compressibility and resilience to fill the space 505 between the hearths 158a and 158b as their respective motions 162a and 162b causes that space to increase and decrease. Pads composed of matted fibers of alumina oxide, silicon oxide, or a mixture of the two in combination should work for this purpose.

The pad 497 serves to generally and largely isolate the water 493 from the incinerator's hot, caustic, and possibly damaging gas environment 504 which, in particular could damage the seal 485. In other words, it acts as a fire stop. In turn, since the pad 497

generally does not provide a complete seal, the water 493 can stop any gasses that could possibly escape through the pad 497. As discussed above and depending upon the refuse undergoing burning, the water 493 may provide an adequate seal without the pad 500. Similarly, the circumstances may permit the pad 497 to function as a complete seal, totally dispensing with the necessity for and presence of the water seal 490.

When the pad 497 provides the seal between the hearths 159a and 158b, the vertical seal for the former should fall along the line 506. This again provides a closed perimeter for a complete seal. Further, as suggested by this figure, a fibrous pad similar to the pad 497 itself can form the upper, loader-end, horizontal cross seal or the lower, ash-end, horizontal seal by itself or in conjunction with another type of seal such as a water seal.

Figure 46 shows a water seal 490 and a pad seal 507 virtually identical to those of the prior figure. However, here the pad 508 rubs against the steel plate 509 which sits in the recess 510 in the refractory 503 of the bottom surface 511 of the upper hearth 158a. As the two hearths 158a and 158b move relative to each other, the recess 510 helps control the motion of the pad 509 anchored to the lower hearth 158b by the pins 512. Otherwise, all of the remarks made for Figure 45 apply here as well.

Figure 47 depicts the intermediate, horizontal, cross water seal generally at 512 located between the upper and lower hearths 158a and 158b, respectively. This figure appears very similar to the intermediate water seal 475 of Figures 43 and 44. Here, however, the upper hearth 158a and the lower hearth 158b connect to the flexible webs 513 and 514, respectively, sitting in the water 515 in the trough 516. The weight rods 517 and 518 attach to the respective bottoms of the webs 513 and 514 to keep them in the water 515. Again the side, vertical seal, indicated by the line 517 of the upper hearth 158a

aligns with the web 513 attached to that hearth. Similarly, the side, horizontal seal falls on the line 518 of the lower hearth. These orientations provide a closed perimeter across the juncture of the two hearths to create a seal between the furnace's fire side 519 and the exterior side 520.

The seal shown generally at 521 in Figure 48 has the same components as the seal 475 of Figure 44. Accordingly, the two figures use the same item numerals. However, the seal of the current figure has two additional features. First, it includes the flexible, resilient fibrous pad 522 anchored to the lower hearth 158b by the steel pins 523. This pad 522 serves the same sealing purpose and operates in the same manner as the pads 495 and 504 in Figures 45 and 46, respectively.

Additionally, the seal 521 includes the bag 523 held in place against the blades 478 and 485 by the support strips 525 and 526, respectively. The bag 523, in order to provide an effective seal, must completely envelop the blades 478 and 485. It should also display sufficient resilience to accommodate the motion of the hearths 158a and 158b in their pulsed motions 162a and 162b. Finally, the composition of the bag 523 should permit it to withstand the environment of the incineration area 486, or at least as much as may pass through the fibrous pad 522 when that item is included in the construction. The material mentioned as the bag 322 in Figures 25 and 26 should suffice for the bag 523 here as well.

The seal 521 in Figure 48 includes the three components of the bag 523, the water 479, and the fibrous pad 522. Depending upon the environment in the incinerator main chamber 486, the seal 521 may adequately perform its function with only two or even one of the components listed above. In particular, the blades 478 and 485 serve both to keep the bag 523 in the water 479 and to provide a water seal should the bag 523 fail. Accordingly, should the circumstances as discussed above indicate the omission of the

water 479 (and perhaps the trough 480), then the seal 521 may have no need for the blades 478 and 485.

Figure 49 contains a drawing of the main incinerator chamber indicated generally at 527 very similar to the chamber 84 of Figure 1 (but from the other side). The chamber 527 includes the upper and lower hearths 158a and 158b. The cables 531a hang from the circular beams 532a of the stationary structure 533 and circle under the beams 534a of the pulsed hearth 158a. The cables 531a thus serve to suspend the hearth 158a from the superstructure 533 and allow it swing in the somewhat pendulous style of the pulsed motion 162a discussed in Basic's U.S. patent 4,475,469, above. Similar remarks apply to the lower hearth 158b held suspended by the cables 531b wrapped around the beams 532b of the stationary superstructure 533 and the beams 534b attached to the hearth 158b.

The upper hearth 158a receives isolating sealing from the loader-end cross seal and trough 537, the side, horizontal seal and trough 538a, the vertical side seal 539a, and the middle, horizontal cross seal and trough 540. Similarly, the sealing perimeter around the lower hearth 158b includes, again, the middle cross seal and trough 540, the side, horizontal seal and trough 538b, the side vertical seal 539b, and the lower, ash-end, horizontal, cross seal 541. All of the seals listed above interconnect and form a closed perimeter and thus a complete seal around the hearths 158a and 158b to isolate the incinerator's interior from its exterior. All of the seals except for the vertical seals 539a and 539b make use of water in a trough. The vertical seals 539a and 539b, as shown, employ some form of a frictional or bag seal discussed before. The interconnection of the water seals for the lower hearth 158b appears below in Figures 50 to 53. A similar pattern, albeit with somewhat shorter sides, works as well for the upper hearth 158a.

The interconnected trough system for the lower hearth 158b of Figure 49 appears generally at 545 in Figure 50. It includes the two side, horizontal troughs 546 connected to the upper, horizontal, cross trough 547. The trough system 545 remains stationary on the superstructure 533 of Figure 49. Since similar structures apply to the trough system 545 for the upper and lower hearths 158a and 158b, the following refers to a general hearth 158.

The water in the side troughs 546 and the cross trough 547 may flow freely from and into each other at the corners 548, one of which appears in Figure 51. As seen there, the horizontal cross seal trough 547 appears in dashed lines since it lies behind (in the drawing) the trough 546 for the side horizontal seal. The two troughs interconnect, and the water from one may flow into the other to provide a continuous seal. The abutment 552 connects the two troughs together, and the cover 553, attached by the hinge 554, permits access into the cross trough 547.

Figure 52 shows a corner 555 of the pulsed hearth 158. The hearth 158 has the side blade 556 attached to its side wall 557. The end of the hearth 158 has the end, horizontal flexible web 418 (as seen also in Figure 35). As Figure 52 illustrates, the flexible web 418 sits tightly against the side blade 556 to prevent the passage of gas between them. A similar side blade attaches to the other end of the web 418 not seen in the figure. The continuous and interconnected structure of the side blade 556, the flexible web 418, and the side blade not seen in Figure 52 then sits in the trough structure 545 of Figure 50 filled with water to form a connected, continuous water seal around three sides of the hearth 158. To complete the seal, two vertical seals would connect to the bottom of the ends 558 of the side troughs 546 in Figure 50. A lower, horizontal cross (water) seal would then

connect to the bottoms of the vertical seals to provide a closed perimeter around the hearth.

The hearth 158 of Figure 53 appears very similar to that of Figure 52 except that, instead of the flexible web 418, it has the stainless steel blade 422 (like that seen in Figure 36). Again, establishing a gas-tight meeting along the line 559 where the side blade 556 and the steel blade meet provides a tight seal at the corner of the hearth 158.

Figure 54 shows a portion of the side trough 546, first seen in Figure 50, but attached to a section of the exterior stationary superstructure 561 of the main incinerator chamber. Both of the drawings show that the side trough includes the pan-shaped trough portions 562 to 567 typically made of a corrosion-resistant material such as stainless steel. The pan troughs 562 to 567 permit external access to the pans 563 to 567 and thus the water of the side trough 546 for servicing. Further, the pan 565 has the plug 571 in its bottom to permit draining of the water in the trough system. Also, the pan 563 includes the float device 574 which serves to maintain the water in the trough system at the desired level notwithstanding evaporation, spillage and the like.

As seen in Figures 54 and 55, the pans 562 to 567 have the barrier plate 575 extending from side to side. The barrier plate 575 dips into the water 576 (in the seal 538 of Figure 55) to prevent gasses from the combustion fire area 577 from passing over the pan and into the external area 578. However, the barrier plate 575 does not extend all the way to the bottom of the pan 564, leaving the passageway 581 at its bottom for water to pass underneath to and from the portion 582 of the side trough 546 where the side blade 556 sits in the water.

The pans 562 to 567, in Figures 50, 54, and 55 cannot form a single continuum from end-to-end of the side trough 546 for a number of reasons. First, the pans cannot

extend through the supporting posts 583 of the stationary structure 561. Second, the beams 532b that hold up the hearth preclude the placement of pans in the sections 584 where they occur. Without pans in these areas, the trough 546 takes the U-shape given it by the trough bottom 587 which occurs behind the posts 583 and behind the sections 584. Nonetheless, the side trough 546 provides the continuous groove 582 into which sits the side blade 556 (of Figures 52 and 53) of the hearth 158. Obviously, a gas-tight enclosure must exist between the trough 546, the pans 562 to 567, the posts 583, the groove 582 and the barrier plates 575 to prevent the leakage of gas from the combustion environment 577, on its interior, to the exterior 578.

Other details of the horizontal, side seal appear in Figures 55 and 56. There, the hearth 158 has the refractory coating 590. The tubes 591 pass through the refractory 590 of the wall 592 to provide underfire air to refuse burning on the hearth 158. The vertical refractory wall 592 has the outcrop portion 593 directed towards the interior of the incinerator. This outcrop 593 tends to bar refuse pushed from the center of the hearth and to the side from becoming entrapped in the area 596 between the hearth 158 and the stationary roof 597. The roof 597, in turn, has the refractory coating 598. The roof's sidewall 599 has the tubes 600 passing through it to provide overfire air to the burning refuse. The roof 597 has the overhang portion 603 which sits over the outcrop 593 of the hearth 158. The overhang 603 also helps keep material, dust, and the like from entering the space 596.

Figure 57 simply shows the three pulsing hearths 158a, 158b, and 158c arranged in tandem. Each has its own respective side, horizontal, water seal 538a, 538b, and 538c, respectively.

Figure 58 shows the side, horizontal water seal 538 like that in Figure 55. In addition, it has the fibrous pad 606 which sits in the space 596 between the hearth 158 and the roof overhang 603. The alloy pins 607 anchor the pad 606 both to the refractory 590 of the sidewall 592 of the hearth 158, and the steel plate 608. The fibrous pad 606 accordingly moves with the hearth 158 which rubs against the steel plate 609 covering the refractory 610 of the roof overhang 603. Accordingly, the pad 606 should have a lubricated surface 611 where it meets and abrades against the steel plate 609.

The hearth in Figure 58 moves into and out of the paper. Clearly, the fibrous pad 606 must accommodate that horizontal motion. Further, during its horizontal motion, the hearth 158 also has a vertical component of motion. To operate properly under these conditions, the pad 606 must display sufficiency flexibility to withstand the compression as it is squeezed between the sidewall 592 and the overhang 603. Yet, it must also posses sufficient resilience to expand and fill the same space as the hearth 158 moves away from the overhang 603. The remarks concerning the fibrous pads 495 and 504 of Figures 45 and 46, respectively, apply with equal force here.

Figure 59 similarly shows the fibrous pad 613 similarly anchored by the steel pins 614 to the sidewall 592 of the hearth 158. In this situation, however, the pad 613 sits and moves against the lubricated steel plate 615 in the recess 616 placed under the refractory 610 in the stationary overhang 603. As with Figure 58, the drawing shows the water seal 538 in addition to the pad 613. In certain situations, the pad may prove sufficient by itself in either situation.

Figure 60 appears virtually identical to the prior figure except for the addition of the baggie 618 sitting in the trough 582 and completely enveloping the blade 556. The strip 619 attaches the baggie 618 to the hearth 158, and the strip 620 similarly affixes the

baggie 618 to the post 583 of the stationary structure. As with Figure 48, the baggie seal 618 results in a triple seal for the hearth 158, including the water 576, the pad 613, and the baggie 618. Not all of these may be required for any particular situation. In particular, eliminating the water 676 may obviate the blade 556. The discussion for the horizontal cross seal of Figure 48 applies to the side, horizontal seal here.

Figures 61 to 65 illustrate the use of different media 623 in the trough 582 attached to the post 583 of the stationary structure. In the fashion discussed above, the insertion of the blade 556 in the medium 623 provides a horizontal, side seal. Regardless of its exact nature, the medium 623 should allow the hearth to travel through its pulsed, arcuate motion without damaging the trough 582, the blade 556, or the medium 623 itself. Furthermore, any of the media may well find use with any of the other seals set forth above such as the fibrous pad, the baggie, or both to form a multiple seal.

In any event, Figure 61 shows the medium 623 taking the form of water 576 discussed in the preceding figures. In Figure 62, the sand 626 sits in the side trough 582 and acts as the sealing medium. In Figure 63, the fine mesh screen 627 is welded near the bottom of the trough 582. The sand 628 then sits on top of the screen 627. The conduit 631 enters the trough below the screen 627 and can introduce air or any other gas through its opening 632 to help further fluidize the sand 628 when the need exists. As with the discussion concerning Figures 39 to 42, the air may be introduced continuously, intermittently, or not at all. Such air may also provide a positive pressure to help prevent the escape of combustion gas from the furnace area of the incinerator as does the blower 165 of Figure 2.

The bubble-type material 635 and 636 such as pebbles, alumina, or silica, seen in Figures 64 and 65, respectively, take the place of the sand 626 and 628 of Figures 62 and 63. Otherwise, the remarks given above apply here as well.

## CLAIMS

Accordingly, what is claimed is:

1. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion when said motion means moves said floor means generally along said path but with substantial deviations from said path.

2. The improvement of Claim 1 wherein said deviations are along the direction of said path.

3. The improvement of Claim 1 wherein said deviations are transverse to the direction of said path.

4. The improvement of Claim 3 wherein said deviations are both along and transverse to the direction of said path.

5. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse and an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means and substantially preventing the passage of gas between said wall means and said floor means along at least a portion of said perimeter when said motion means moves said floor means generally along said path but with substantial deviations from said path.

6. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the

passage of gas between said wall means and said floor means at said portion, said seal means comprising:

A. retaining means, coupled to one of said floor means and said wall means, for holding a substantially fluidized, nongaseous material; and

B. an immersion device, coupled to the other of said floor means and said wall means, and located at least in part, in said material as said floor means moves along said substantially predetermined path.

7. The improvement of Claim 6 wherein said material is a liquid.

8 The improvement of Claim 6 wherein said material is a substantially fluid particulate solid.

9. The improvement of Claim 6 wherein a gas is passed through said particulate solid.

10. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means; holding a substantially fluidized, nongaseous material on one of said floor means and said wall

means along at least a portion of said perimeter; and holding an immersion device to the other of said floor means and said wall means along said portion of said perimeter, and located at least in part, in said material as said floor means is moved along said substantially predetermined path.

11. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising a substantially flexible, gas-impervious, heat resistant web of material coupled to said floor means and to said wall means.

12. The improvement of Claim 11 wherein said web forms an enclosure and further including a resilient material within said enclosure.

13. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber

comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, comprising moving said floor means along a substantially predetermined path relative to said wall means, attaching a substantially flexible, gas-impervious, heat resistant web of material to said floor means along at least a portion of said perimeter; and attaching said web of material to said wall means along said portion of said perimeter.

14. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means.

15. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber

comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means along at least a portion of said perimeter.

16. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising a sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said floor means and said wall means and urged against the other of said floor means and said wall means.

17. The improvement of Claim 16 wherein said material is corrosion-resistant spring steel.

18. The improvement of Claim 16 further including coaxing means, coupled to said material and to said one of said floor means and said wall means, for pushing said material against the other of said floor means and said wall means.

19. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means; affixing a sheet of substantially flexible, gas-impervious, form-retaining material to one of said floor means and said wall means along at least a portion of said perimeter; and urging said material against the other of said floor means and said wall means.

20. In a system comprising first and second surfaces meeting along a substantially linear path and motion means, coupled to said first and second surfaces, for moving said first surface along a substantially predetermined path relative to said second surface, the improvement comprising seal means, coupled to said first and second surfaces and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second surfaces at said portion when said motion means moves said first surface relative to said second surface generally along said path but with substantial deviations from said path.

21. The improvement of Claim 20 wherein said deviations are along the direction of said path.

22. The improvement of Claim 20 wherein said deviations are transverse to the direction of said path.

23. The improvement of Claim 22 wherein said deviations are both along and transverse to the direction of said path.

24. The method of improving the atmospheric quality on at least one side of first and second surfaces meeting along a substantially linear path comprising moving said first surface along a substantially predetermined path relative to said second surface and substantially preventing the passage of gas between said first surface and said second surface along at least a portion of said substantially linear path when said first surface moves generally along said predetermined path but with substantial deviations from said predetermined path relative to said second surface.

25. In a system comprising first and second surfaces meeting along a substantially linear path and motion means, coupled to said first and second surfaces, for moving said first surface along a substantially predetermined path relative to said second surface, the improvement comprising seal means, coupled to said first and second surfaces and extending along at least a portion of said linear path, for substantially preventing the

passage of gas between said first and second surfaces at said portion, said seal means comprising:

A. retaining means, coupled to one of said first and second surfaces, for holding a substantially fluidized, nongaseous material; and

B. an immersion device, coupled to the other of said first and second surfaces and located at least in part, in said material as said first surface moves along said substantially predetermined path.

26. The improvement of Claim 25 wherein said material is a liquid.

27 The improvement of Claim 25 wherein said material is a substantially fluid particulate solid.

28. The improvement of Claim 25 wherein a gas is passed through said particulate solid.

29. The method of improving the atmospheric quality on at least one side of first and second surfaces meeting along a substantially linear path comprising moving said first surface along a substantially predetermined path relative to said second surface; holding a substantially fluidized, nongaseous material onto one of said first and second surfaces along at least a portion of said linear path; and holding an immersion device onto the other of said first and second surfaces and in said material as said one surface is moved along said substantially predetermined path.

30. In a system comprising first and second surfaces meeting along a substantially linear path and motion means, coupled to said first and second surfaces, for moving said first surface along a substantially predetermined path relative to said second surface, the improvement comprising seal means, coupled to said first and second surfaces and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second surfaces, said seal means comprising a substantially flexible, gas-impervious web of material coupled to said first and second surfaces.

31. The improvement of Claim 30 wherein said web forms an enclosure and further including a resilient material within said enclosure.

32. The method of improving the atmospheric quality on at least one side of first and second surfaces meeting along a substantially linear path comprising moving said first surface along a substantially predetermined path relative to said second surface, attaching a substantially flexible, gas-impervious web of material to said first floor section along a portion of said substantially linear path and attaching said web of material to said second floor section along said portion of said substantially linear path.

33. In a system comprising first and second surfaces meeting along a substantially linear path and motion means, coupled to said first and second surfaces, for moving said first surface along a substantially predetermined path relative to said second surface, the improvement comprising seal means, coupled to said first and second surfaces and extending along at least a portion of said linear path, for substantially preventing the

passage of gas between said first and second surfaces at said portion, said seal means comprising a compressible, resilient, substantially gas-impervious, pad of material retained between said first and second surfaces.

34. The method of improving the atmospheric quality on at least one side of first and second surfaces meeting along a substantially linear path comprising moving said first surface along a substantially predetermined path relative to said second surface and retaining a compressible, resilient, substantially gas-impervious, pad of material along at least a portion of said substantially linear path between said first and second surfaces.

35. In a system comprising first and second surfaces meeting along a substantially linear path and motion means, coupled to said first and second surfaces, for moving said first surface along a substantially predetermined path relative to said second surface, the improvement comprising seal means, coupled to said first and second surfaces and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second surfaces at said portion, said seal means comprising a sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said first and second surfaces and urged against the other of first and second surfaces.

36. The improvement of Claim 35 wherein said material is spring steel.

37. The improvement of Claim 35 wherein said spring steel is corrosion-resistant.

38. The improvement of Claim 35 further including coaxing means, coupled to said material and to said one of said first and second surfaces, for pushing said material against the other of said first and second surfaces.

39. The method of improving the atmospheric quality on at least one side of first and second surfaces meeting along a substantially linear path comprising moving said first surface along a substantially predetermined path relative to said second surface; comprising affixing a sheet of substantially flexible, gas-impervious, form-retaining material to one of said first and second surfaces along at least a portion of said substantially linear path and urging said material against the other of first and second surfaces.

40. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means, the improvement comprising seal means, coupled to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at

said portion when said motion means moves said first and second floor sections relative to each other.

41. The improvement of Claim 40 wherein said motion means moves each of said first and second floor sections generally along said paths but with substantial deviations from at least one of said paths and said deviations are along the direction of said one path.

42. The improvement of Claim 40 wherein said motion means moves each of said first and second floor sections generally along said path but with substantial deviations from at least one of said paths and said deviations are transverse to the direction of said one path.

43. The improvement of Claim 42 wherein said deviations are both along and transverse to the direction of said one path.

44. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall

means and substantially preventing the passage of gas between said first and second floor sections along at least a portion of said linear path when said first and second floor sections are moved relative to each other.

45. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising:

A. retaining means, coupled to chamber, for holding a substantially fluidized, nongaseous material; and

B. an immersion device, coupled to at least one of said first and second floor sections, and located at least in part, in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths.

46. The improvement of Claim 45 wherein said retaining means is coupled to said wall means and said immersion device comprises first and second immersion sections coupled to said first and second floor sections, respectively, said first and second immersion sections being located at least in part, in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths.

47. The improvement of Claim 46 wherein said material is a liquid.

48 The improvement of Claim 46 wherein said material is a substantially fluid particulate solid.

49. The improvement of Claim 46 wherein a gas is passed through said particulate solid.

50. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; holding a substantially fluidized, nongaseous material onto chamber along at least

a portion of said linear path; and holding an immersion device onto at least one of said first and second floor sections and in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths.

51. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising a substantially flexible, gas-impervious, heat-resistant web of material coupled to said first and second floor sections.

52. The improvement of Claim 51 wherein said web forms an enclosure and further including a resilient material within said enclosure.

53. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber

comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means, attaching a substantially flexible, gas-impervious, heat resistant web of material to said first floor section along at least a portion of said linear path; and attaching said web of material to said second floor section along said portion of said linear path.

54. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising a compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said portion.

55. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained said first and second floor sections along at least a portion of said substantially linear path.

56. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising a sheet of substantially flexible, gas-impervious,

form-retaining material, affixed to one of said first and second floor sections and urged against the other of said first and second floor sections.

57. The improvement of Claim 56 wherein said material is corrosion-resistant spring steel.

58. The improvement of Claim 56 further including coaxing means, coupled to said material and to said one of said first and second floor sections, for pushing said material against the other of said first and second floor sections.

59. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; affixing a sheet of substantially flexible, gas-impervious, form-retaining material to one of said first and second sections along at least a portion of said substantially linear path, and urging said material against the other of first and second sections.

60. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of

combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising:

A. retaining means, coupled to one of said floor means and said wall means, for holding a substantially fluidized, nongaseous material;

B. an immersion device, coupled to the other of said floor means and said wall means, and located at least in part, in said material as said floor means moves along said substantially predetermined path; and

C. a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means.

61. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means; holding a

substantially fluidized, nongaseous material on one of said floor means and said wall means along at least a portion of said perimeter; and holding an immersion device to the other of said floor means and said wall means along said portion of said perimeter, and located at least in part, in said material as said floor means is moved along said substantially predetermined path, and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material between said floor means and said wall means along said portion of said perimeter.

62. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising:

A. retaining means, coupled to one of said floor means and said wall means, for holding a substantially fluidized, nongaseous material;

B. an immersion device, coupled to the other of said floor means and said wall means, and located at least in part, in said material as said floor means moves along said substantially predetermined path; and

C. a substantially flexible, gas-impervious, heat resistant web of material coupled to said floor means and to said wall means.

63. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means; holding a substantially fluidized, nongaseous material on one of said floor means and said wall means along at least a portion of said perimeter; and holding an immersion device to the other of said floor means and said wall means along said portion of said perimeter, and located at least in part, in said material as said floor means is moved along said substantially predetermined path and attaching a substantially flexible, gas-impervious, heat resistant web of material to said floor means along said portion of said perimeter; and attaching said web of material to said wall means along said portion of said perimeter.

64. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving

said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising:

A. a substantially flexible, gas-impervious, heat resistant web of material coupled to said floor means and to said wall means; and

B. a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means.

65. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means; attaching a substantially flexible, gas-impervious, heat resistant web of material to said floor means along at least a portion of said perimeter; and attaching said web of material to said wall means along said portion of said perimeter, and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means along said portion of said perimeter.

66. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means, the improvement comprising seal means, coupled to said wall means and said floor means and extending along at least a portion of said perimeter, for substantially preventing the passage of gas between said wall means and said floor means at said portion, said seal means comprising:

A. a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means; and

B. a sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said floor means and said wall means and urged against the other of said floor means and said wall means.

67. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said floor means along a substantially predetermined path relative to said wall means; affixing

a sheet of substantially flexible, gas-impervious, form-retaining material to one of said floor means and said wall means along at least a portion of said perimeter; and urging said material against the other of said floor means and said wall means, and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means along said portion of said perimeter.

68. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising:

A. retaining means, coupled to chamber, for holding a substantially fluidized, nongaseous material;

B. an immersion device, coupled to at least one of said first and second floor sections, and located at least in part, in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

C. a compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said portion.

69. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; holding a substantially fluidized, nongaseous material onto chamber along at least a portion of said linear path; and holding an immersion device onto at least one of said first and second floor sections and in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material between said first and second floor sections along said portion of said substantially linear path.

70. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall

means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising:

A. retaining means, coupled to chamber, for holding a substantially fluidized, nongaseous material;

B. an immersion device, coupled to at least one of said first and second floor sections, and located at least in part, in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

C. a substantially flexible, gas-impervious, heat-resistant web of material coupled to said first and second floor sections.

71. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along

first and second substantially predetermined paths, respectively, relative to said wall means; holding a substantially fluidized, nongaseous material onto chamber along at least a portion of said linear path; and holding an immersion device onto at least one of said first and second floor sections and in said material as said first and second floor sections move relative to each other and along said substantially predetermined paths and attaching a substantially flexible, gas-impervious, heat resistant web of material to said first floor section along said portion of said linear path; and attaching said web of material to said second floor section along said portion of said linear path.

72. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising:

A. a substantially flexible, gas-impervious, heat-resistant web of material coupled to said first and second floor sections; and

B. a compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said portion.

73. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; attaching a substantially flexible, gas-impervious, heat resistant web of material to said first floor section along said portion of said linear path; and attaching said web of material to said second floor section along said portion of said linear path and retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained said first and second floor sections along said portion of said substantially linear path.

74. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said first and second floor

sections and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to to said first and second floor sections and extending along at least a portion of said linear path, for substantially preventing the passage of gas between said first and second floor sections at said portion, said seal means comprising:

A. a compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said portion; and

B. a sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said first and second floor sections and urged against the other of said first and second floor sections.

75. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; affixing a sheet of substantially flexible, gas-impervious, form-retaining material to one of said first and second floor sections along at least a portion of said substantially linear path, urging said material against the other of first and second floor sections, and

retaining a compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections along said portion of said substantially linear path.

76. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. first retaining means, coupled to one of said floor sections and said wall means at said first portion, for holding a substantially fluidized, nongaseous material;

B. a first immersion device, coupled to the other of said floor sections and said wall means at said first portion, and located at least in part, in said material

in said first retaining means as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

C. second retaining means, coupled to chamber at said second portion, for holding a substantially fluidized, nongaseous material; and

D. a second immersion device, coupled to at least one of said first and second floor sections at said second portion, and located at least in part, in said material in said second retaining means as said first and second floor sections move relative to each other and along said substantially predetermined paths.

77. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; holding a substantially fluidized, nongaseous material on one of said floor means and said wall means along at least a first portion of said perimeter; holding a first immersion device to the other of said floor means and said wall means along said first portion of said perimeter, and located at least in part, in said material as said first and second floor sections move along said substantially predetermined paths, holding a substantially fluidized, nongaseous

material on one of said first and second floor sections along at least a second portion of said linear path; holding a second immersion device to the other of said first and second floor sections along said second portion of said linear path, and located at least in part, in said material as said first and second floor sections move along said substantially predetermined paths.

78. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. a first substantially flexible, gas-impervious, heat resistant web of material coupled to said floor means and to said wall means at said first portion; and

B. a second substantially flexible, gas-impervious, heat-resistant web of material coupled to said first and second floor sections at said second portion.

79. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; attaching a first substantially flexible, gas-impervious, heat resistant web of material to said floor means along a first portion of said perimeter; attaching said first web of material to said wall means along said first portion of said perimeter, attaching second a substantially flexible, gas-impervious, heat resistant web of material to said first floor section along a second portion of said linear path; and attaching said web of material to said second floor section along said second portion of said linear path.

80. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall

means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. a first sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said floor means and said wall means at said first portion and urged against the other of said floor means and said wall; and

B. a second sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said first and second floor sections at said second portion and urged against the other of said first and second floor sections.

81. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said

first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; affixing a first sheet of substantially flexible, gas-impervious, form-retaining material to one of said floor means and said wall means along at least a first portion of said perimeter; and urging said first sheet of material against the other of said floor means and said wall means, affixing a second sheet of substantially flexible, gas-impervious, form-retaining material to one of said first and second floor sections along at least a second portion of said substantially linear path, urging said second sheet of material against the other of first and second floor sections.

82. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. first retaining means, coupled to one of said floor means and said wall means at said first portion, for holding a substantially fluidized, nongaseous material;

B. a first immersion device, coupled to the other of said floor means and said wall means at said first portion, and located at least in part, in said material in said first retaining means as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

C. a first compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means at said first portion;

D. second retaining means, coupled to chamber at said second portion, for holding a substantially fluidized, nongaseous material; and

E. an second immersion device, coupled to at least one of said first and second floor sections at said second poriton, and located at least in part, in said material in said second retaining means as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

F. a second compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said second portion.

83. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber

comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; holding a substantially fluidized, nongaseous material on one of said floor means and said wall means along at least a first portion of said perimeter; holding a first immersion device to the other of said floor means and said wall means along said first portion of said perimeter, and located at least in part, in said material as said first and second floor sections move along said substantially predetermined paths, retaining a first compressible, resilient, substantially gas-impervious, heat-resistant pad of material between said floor means and said wall means along said first portion of said perimeter, holding a substantially fluidized, nongaseous material on one of said first and second floor sections along at least a second portion of said linear path; holding a second immersion device to the other of said first and second floor sections along said second portion of said linear path, and located at least in part, in said material as said first and second floor sections move along said substantially predetermined paths, and retaining a second compressible, resilient substantially gas-impervious, heat-resistant pad of material between said first and second floor sections along said second portion of said substantially linear path.

84. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor

sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. first retaining means, coupled to one of said floor means and said wall means at said first portion, for holding a substantially fluidized, nongaseous material;

B. a first immersion device, coupled to the other of said floor means and said wall means at said first portion, and located at least in part, in said material in said first retaining means as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

C. a first substantially flexible, gas-impervious, heat resistant web of material coupled to said floor means and to said wall means at said first portion; and

D. second retaining means, coupled to chamber at said second portion, for holding a substantially fluidized, nongaseous material; and

E. an second immersion device, coupled to at least one of said first and second floor sections at said second poriton, and located at least in part, in said

material in said second retaining means as said first and second floor sections move relative to each other and along said substantially predetermined paths; and

F. a second substantially flexible, gas-impervious, heat-resistant web of material coupled to said first and second floor sections at said second portion.

85. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; holding a substantially fluidized, nongaseous material on one of said floor means and said wall means along at least a first portion of said perimeter; holding a first immersion device to the other of said floor means and said wall means along said first portion of said perimeter, and located at least in part, in said material as said first and second floor sections move along said substantially predetermined paths, attaching a first substantially flexible, gas-impervious, heat resistant web of material to said floor means along a first portion of said perimeter; attaching said first web of material to said wall means along said first portion of said perimeter, attaching second a substantially flexible, gas-impervious, heat resistant

web of material to said first floor section along a second portion of said linear path; and attaching said web of material to said second floor section along said second portion of said linear path, holding a substantially fluidized, nongaseous material on one of said first and second floor sections along at least a second portion of said linear path; holding a second immersion device to the other of said first and second floor sections along said second portion of said linear path, and located at least in part, in said material as said first and second floor sections move along said substantially predetermined paths, and attaching second a substantially flexible, gas-impervious, heat resistant web of material to said first floor section along a second portion of said linear path; and attaching said web of material to said second floor section along said second portion of said linear path.

86. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and

said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. a first substantially flexible, gas-impervious, heat resistant web of material coupled to said floor means and to said wall means at said first portion;

B. a first compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means at said first portion;

C. a second substantially flexible, gas-impervious, heat-resistant web of material coupled to said first and second floor sections at said second portion; and

D. a second compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said second portion.

87. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; attaching a first substantially flexible, gas-impervious, heat resistant web of material to said floor

means along a first portion of said perimeter; attaching said first web of material to said wall means along said first portion of said perimeter, retaining a first compressible, resilient, substantially gas-impervious, heat-resistant pad of material between said floor means and said wall means along said first portion of said perimeter, attaching a second substantially flexible, gas-impervious, heat resistant web of material to said first floor section along a second portion of said linear path; and attaching said web of material to said second floor section along said second portion of said linear path,, and retaining a second compressible, resilient substantially gas-impervious, heat-resistant pad of material between said first and second floor sections along said second portion of said substantially linear path.

88. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, and motion means, coupled to said floor means and said wall means, for moving said first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, to said wall means, the improvement comprising seal means, coupled to said wall means and said first and second floor sections and extending along at least a first portion of said perimeter and a second portion of said linear path, for substantially preventing the passage of gas between said wall means and

said floor means at said first portion and between said first and second floor sections at said second portion, said seal means comprising:

A. a first sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said floor sections and said wall means and urged against the other of said floor sections and said wall means at said first portion;

B. a first compressible, resilient substantially gas-impervious, heat-resistant pad of material retained between said floor means and said wall means at said first portion;

C. a second sheet of substantially flexible, gas-impervious, form-retaining material, affixed to one of said first and second floor sections at said second portion and urged against the other of said first and second floor sections; and

D. a second compressible, resilient, substantially gas-impervious, heat-resistant pad of material retained between said first and second floor sections at said second portion.

89. The method for improving the atmospheric quality around or in an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means comprising first and second floor sections meeting along a substantially linear path for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising moving said

first and second floor sections relative to each other and along first and second substantially predetermined paths, respectively, relative to said wall means; affixing a first sheet of substantially flexible, gas-impervious, form-retaining material to one of said floor sections and said wall means along at least a first portion of said perimeter; urging said first sheet of material against the other of said floor sections and said wall means, retaining a first compressible, resilient, substantially gas-impervious, heat-resistant pad of material between said floor means and said wall means along said first portion of said perimeter, affixing a second sheet of substantially flexible, gas-impervious, form-retaining material to one of said first and second floor sections along at least a second portion of said substantially linear path, urging said second sheet of material against the other of first and second floor sections, and retaining a second compressible, resilient substantially gas-impervious, heat-resistant pad of material between said first and second floor sections along said second portion of said substantially linear path.

90. In an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse, an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse and wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber, the improvement comprising (a) containment means, coupled to said wall means and said floor means on the exterior of said substantially enclosed chamber and extending along at least a portion of said perimeter for holding a gas pressure greater than that (1) within said substantially enclosed chamber and (2) on the exterior of said substantially enclosed chamber and (b) seal means, coupled to said containment means, for maintaining

said gas pressure within said containment means and at said portion of said perimeter greater than that (1) within said substantially enclosed chamber and (2) on the exterior of said substantially enclosed chamber.

91. The improvement of Claim 90 wherein said chamber further includes motion means, coupled to said floor means and said wall means, for moving said floor means along a substantially predetermined path relative to said wall means and wherein said seal means increases said gas pressure within said containment means and at said portion of said perimeter when said motion means moves said floor means generally along said path but with substantial deviations from said path.

92. The method for improving the atmospheric quality around an incinerator having a substantially enclosed combustion chamber with an inlet for the introduction of refuse and an outlet for the egress of the products of combustion, said chamber comprising floor means for supporting burning refuse, wall means, located above said floor means and forming a substantially closed perimeter with said floor means, for, with said floor means, providing said substantially enclosed chamber comprising increasing the gas pressure within a containment means, coupled to said wall means and said floor means on the exterior of said substantially enclosed chamber and extending along at least a portion of said perimeter to a level greater than that (1) within said substantially enclosed chamber and (2) on the exterior of said substantially enclosed chamber and at said portion of said perimeter and maintaining said gas pressure at said level.

93. The method of Claim 92 further comprising moving said floor means along a substantially predetermined path relative to said wall means and maintaining said gas pressure at said level when said motion means moves said floor means generally along said path but with substantial deviations from said path.

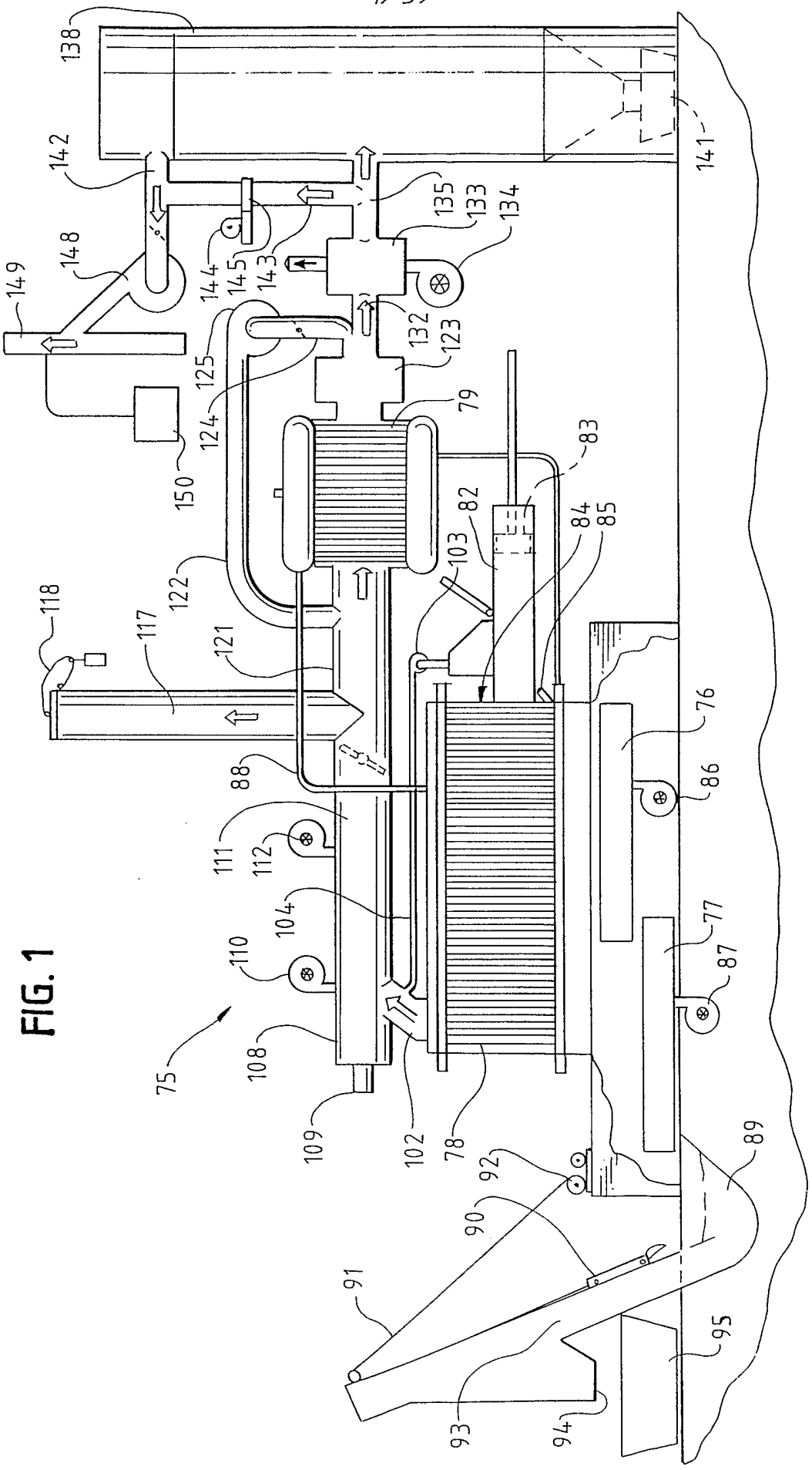

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FIG. 1

FIG. 2

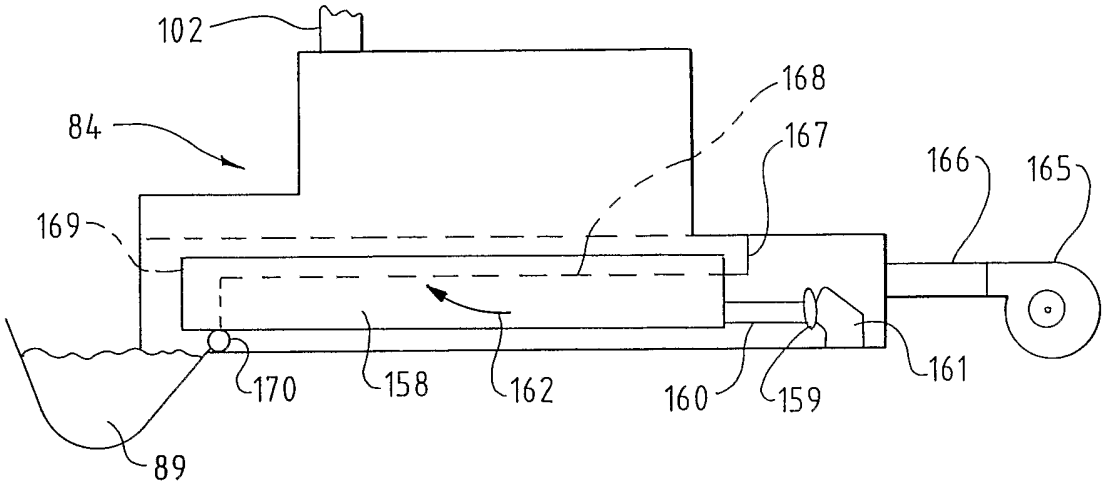
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FIG. 3

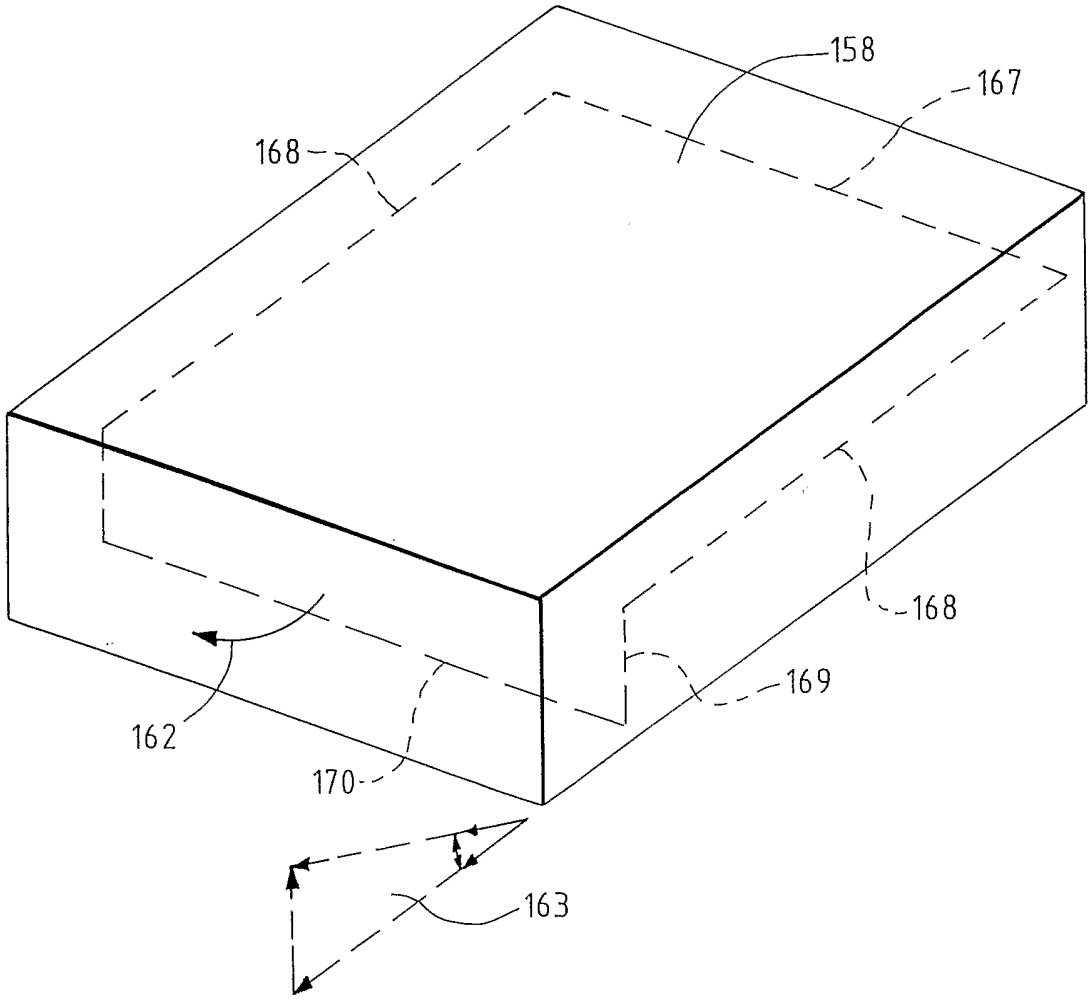
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FIG. 4

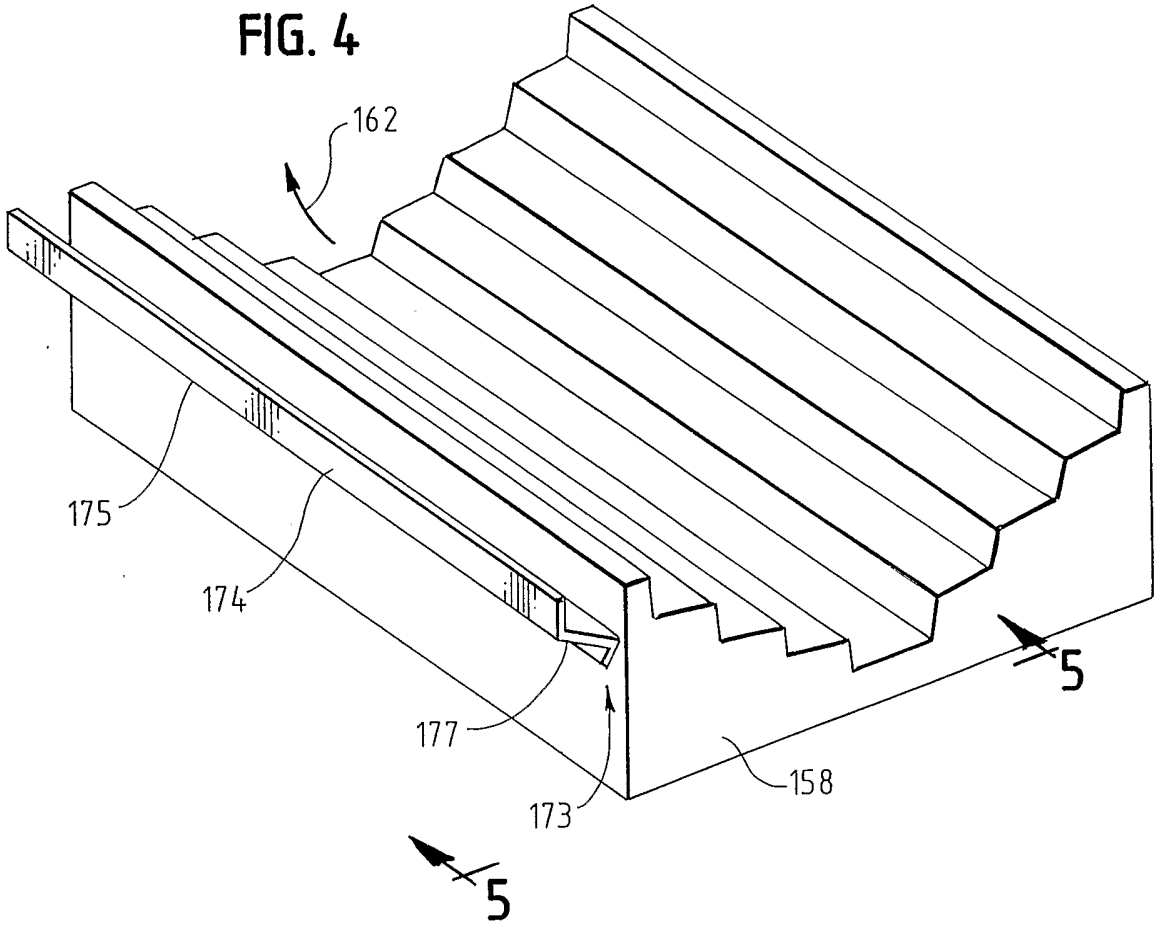



FIG. 5

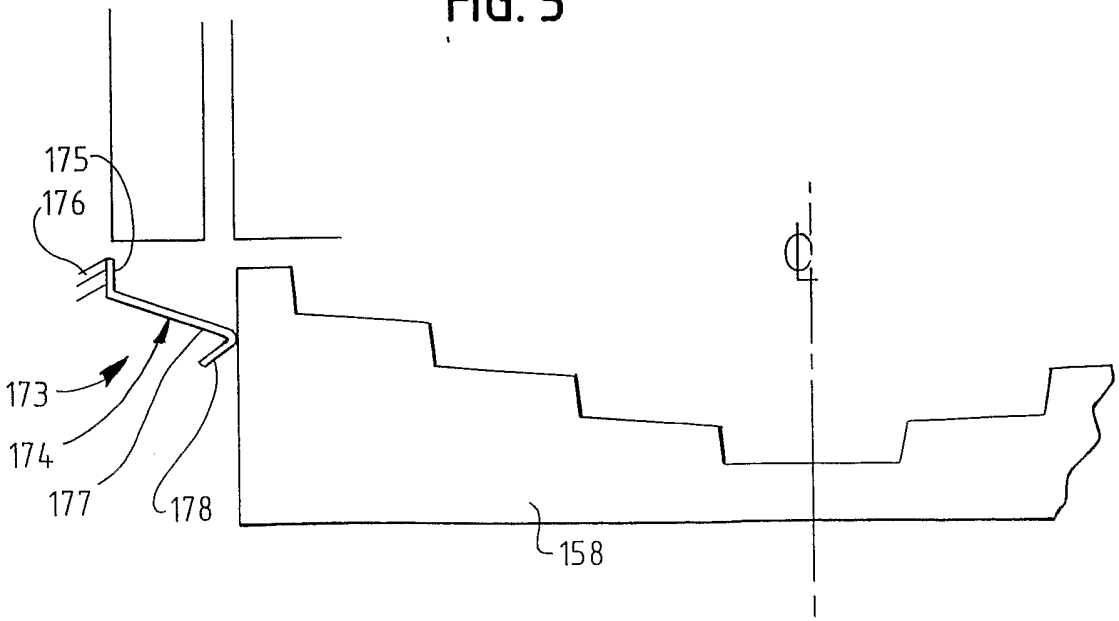


FIG. 6

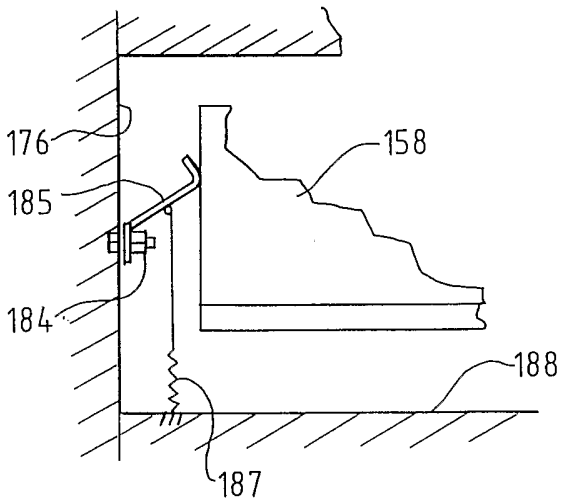



FIG. 7

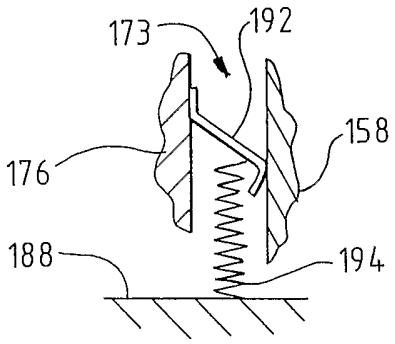



FIG. 8

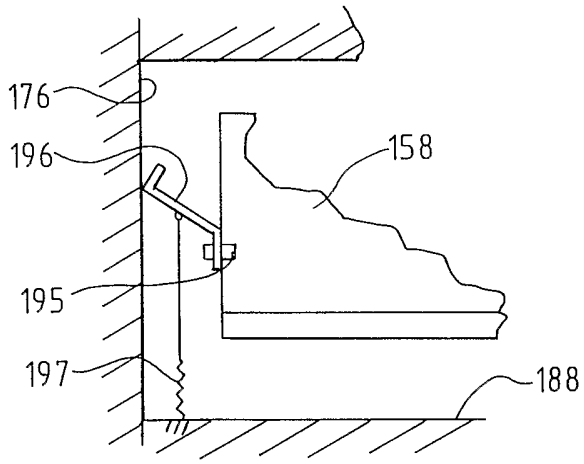



FIG. 9

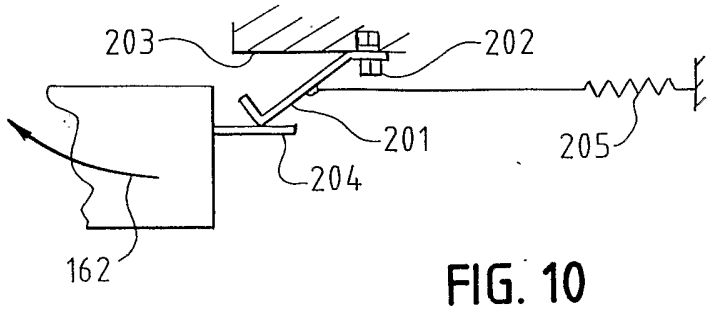



FIG. 10

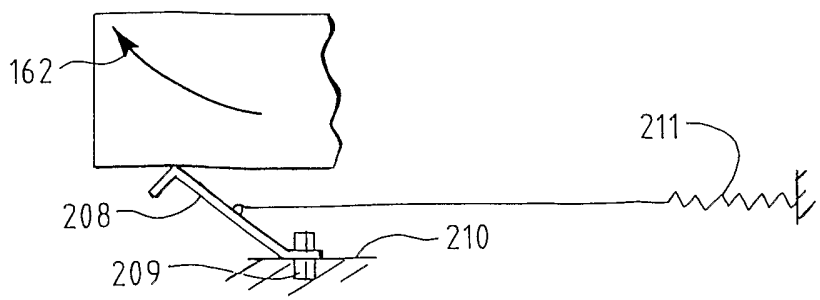


FIG. 14

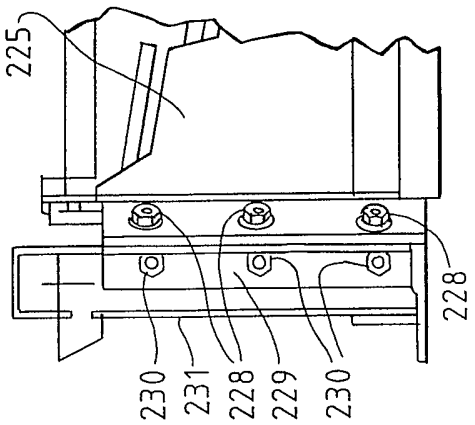



FIG. 13

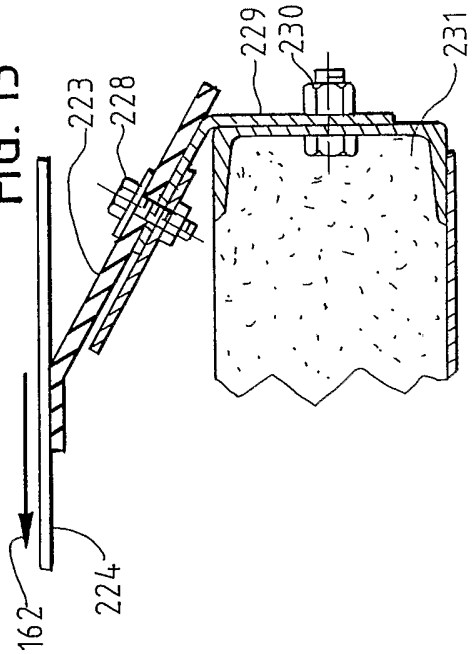



FIG. 11

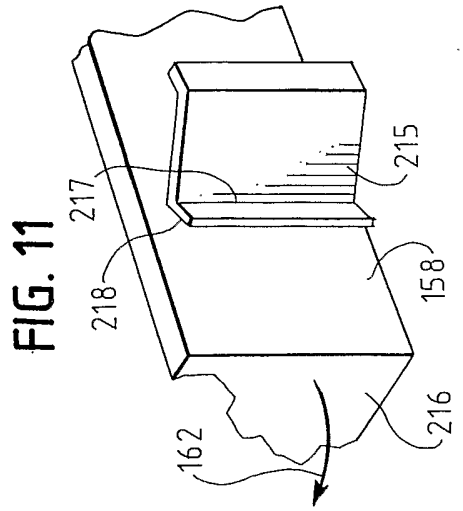
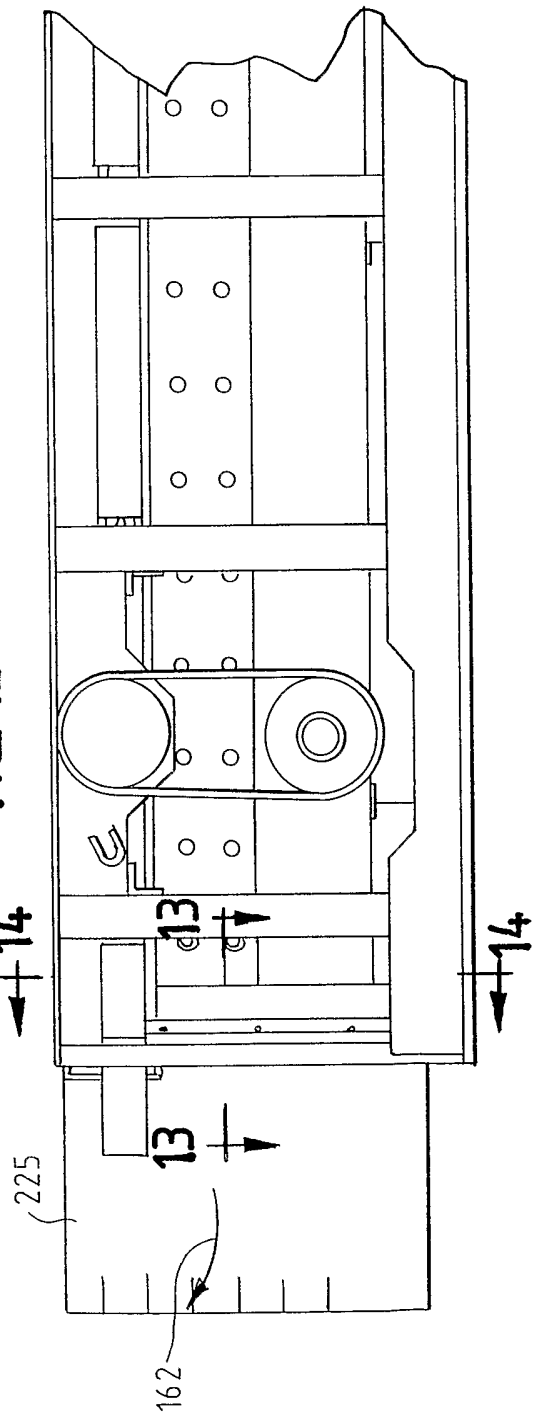



FIG. 12



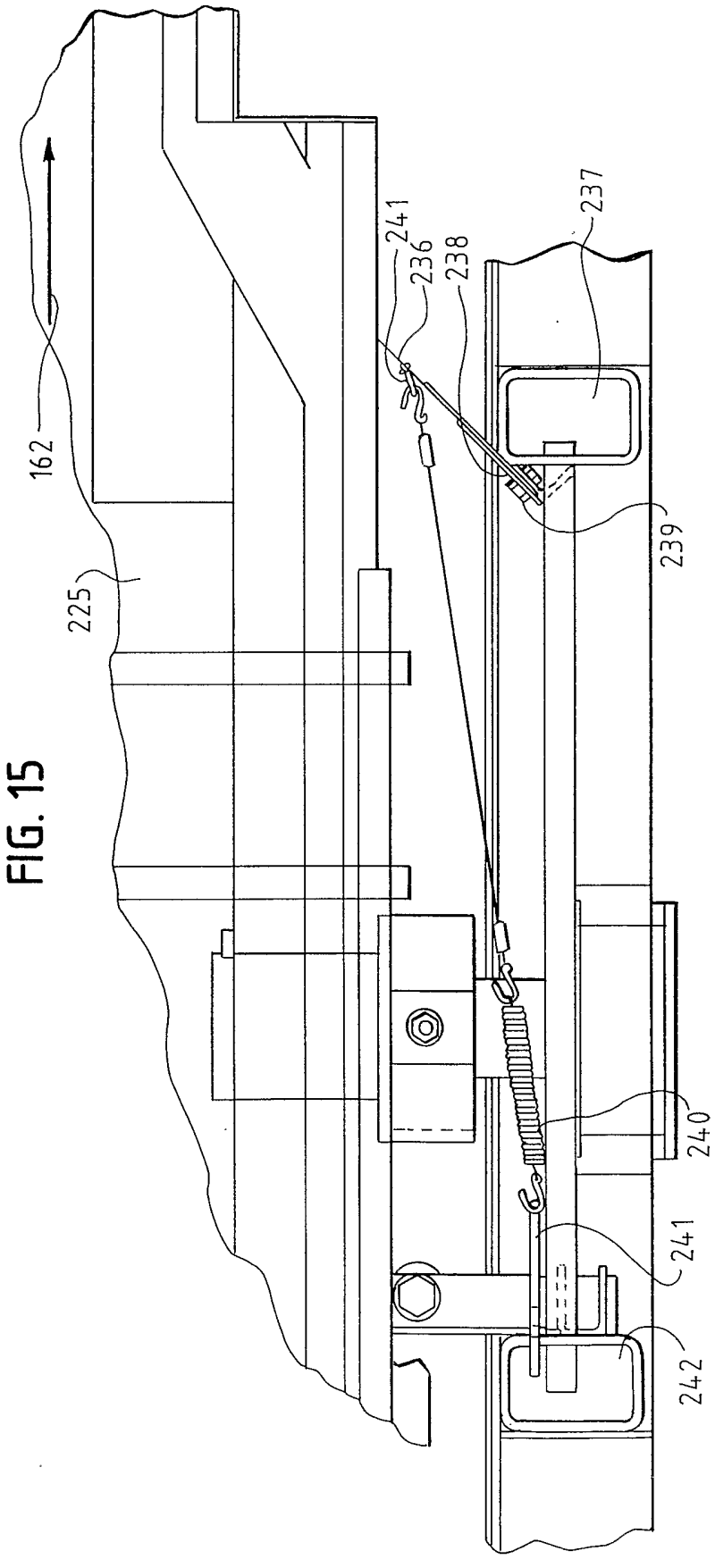

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FIG. 15

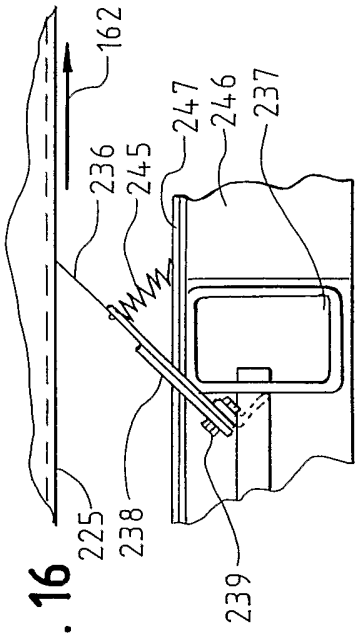
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FIG. 16

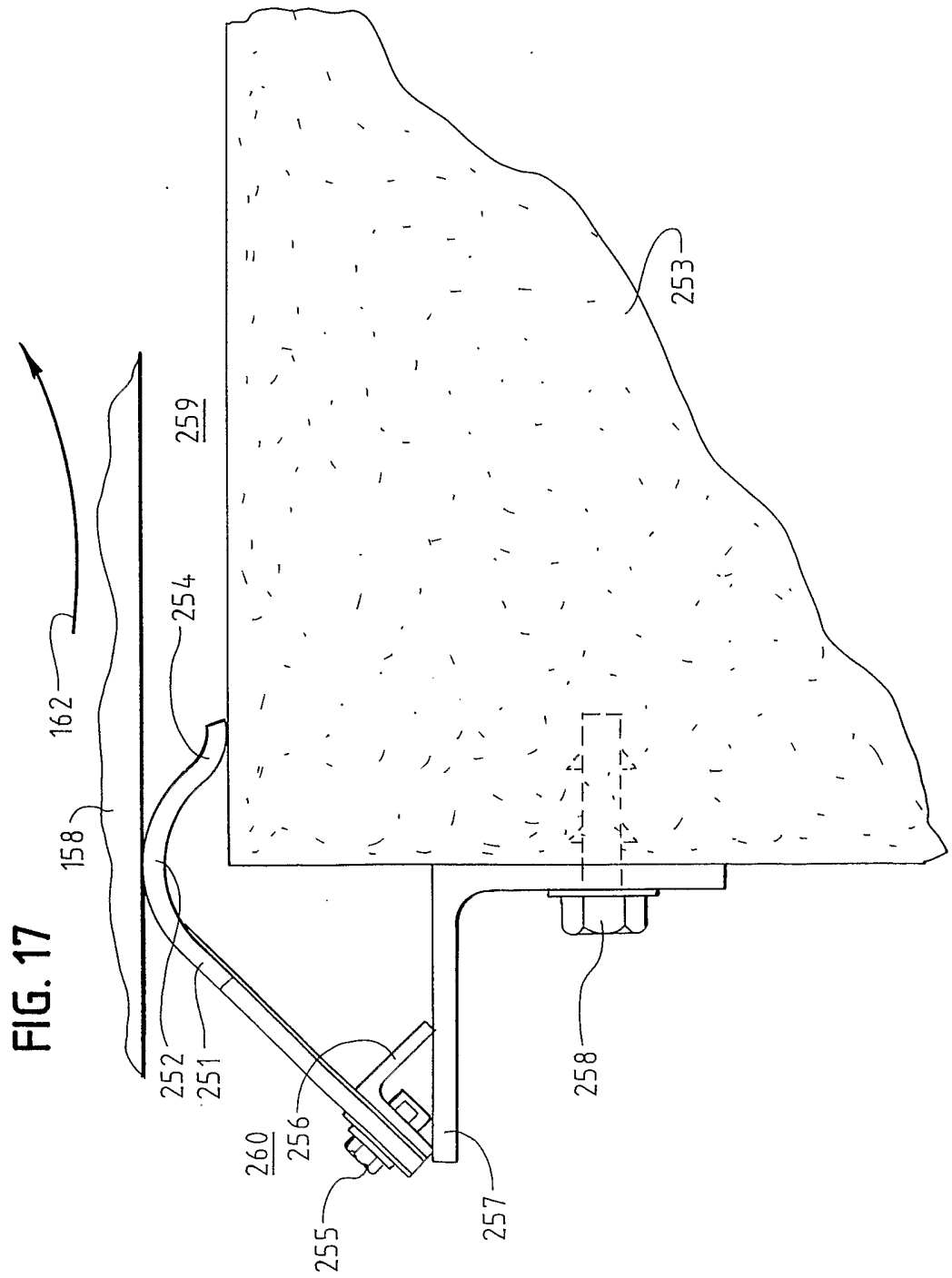


FIG. 17

FIG. 18

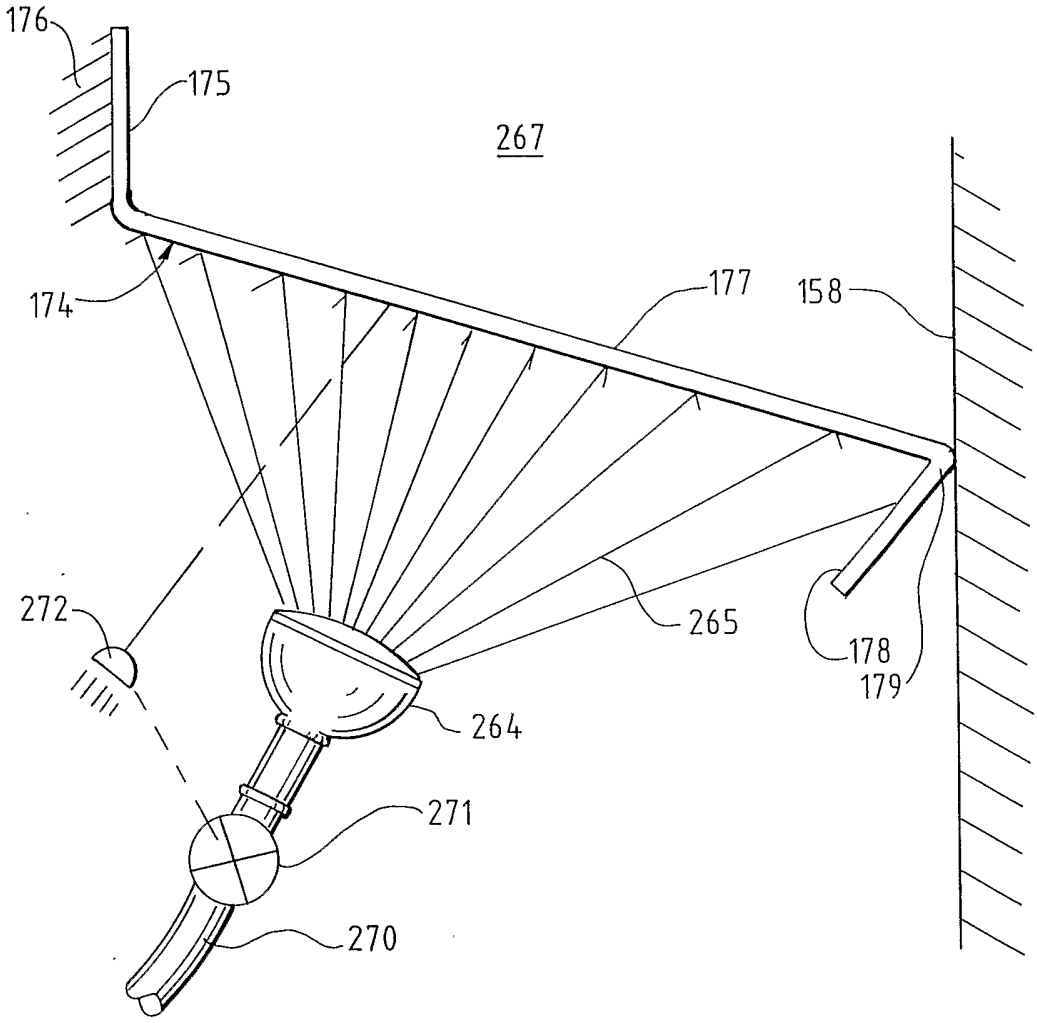
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FIG. 19

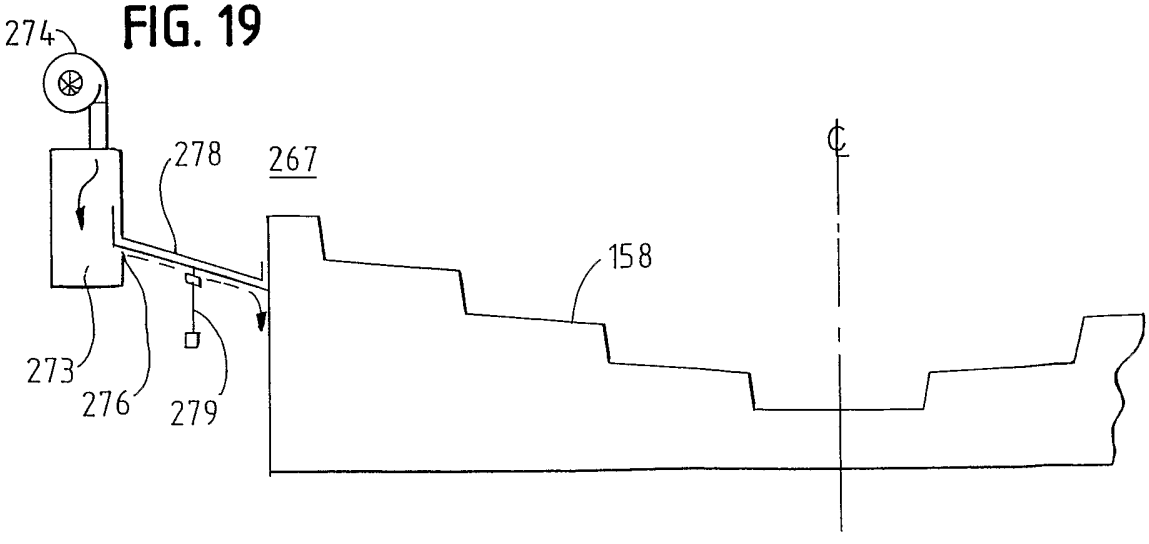
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FIG. 21

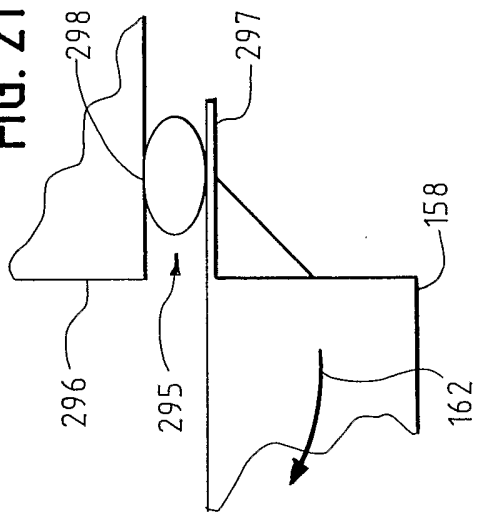


FIG. 22

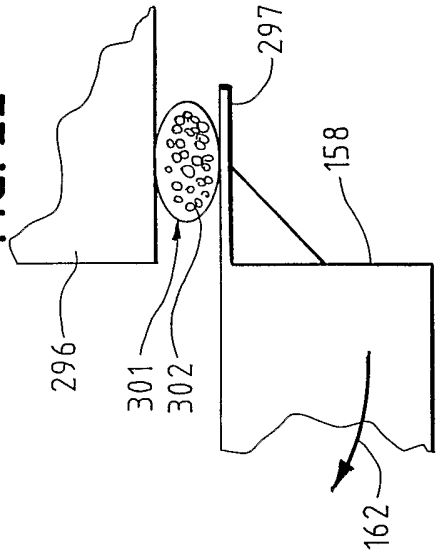


FIG. 20

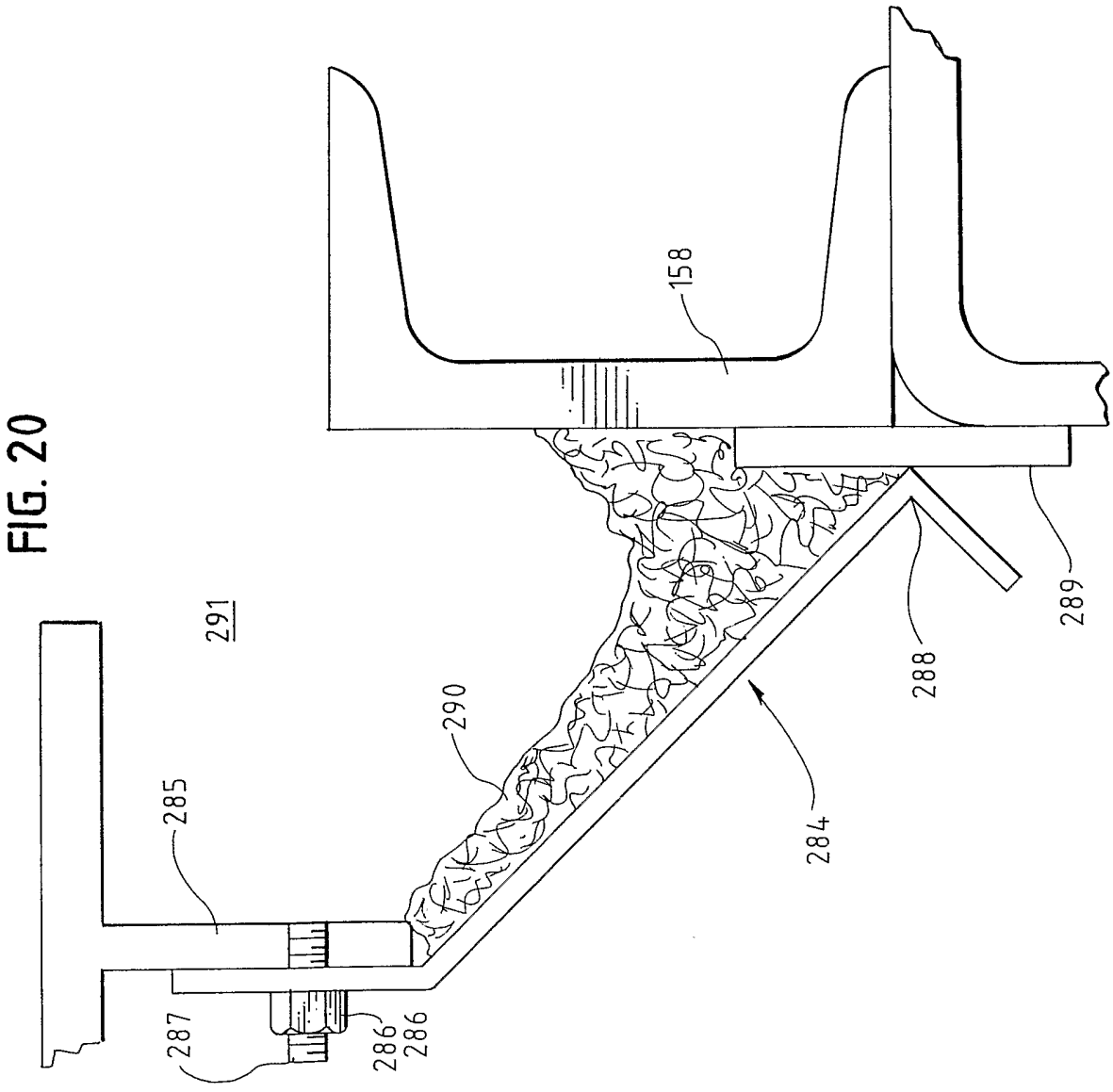

FIG. 24

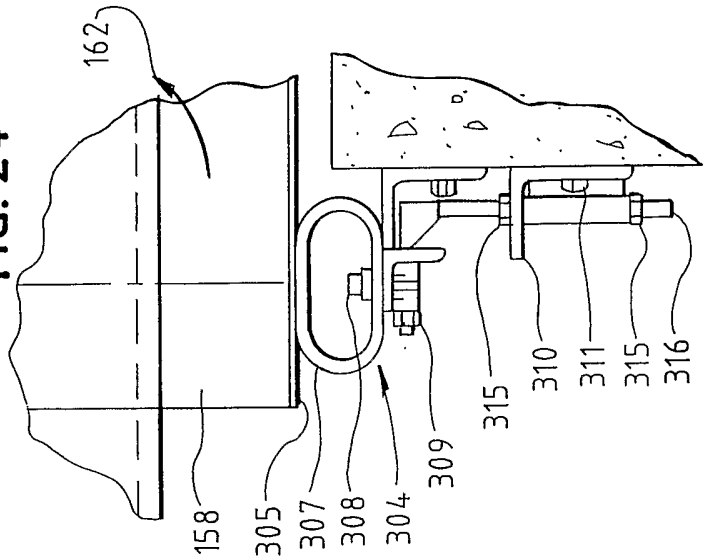
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FIG. 23

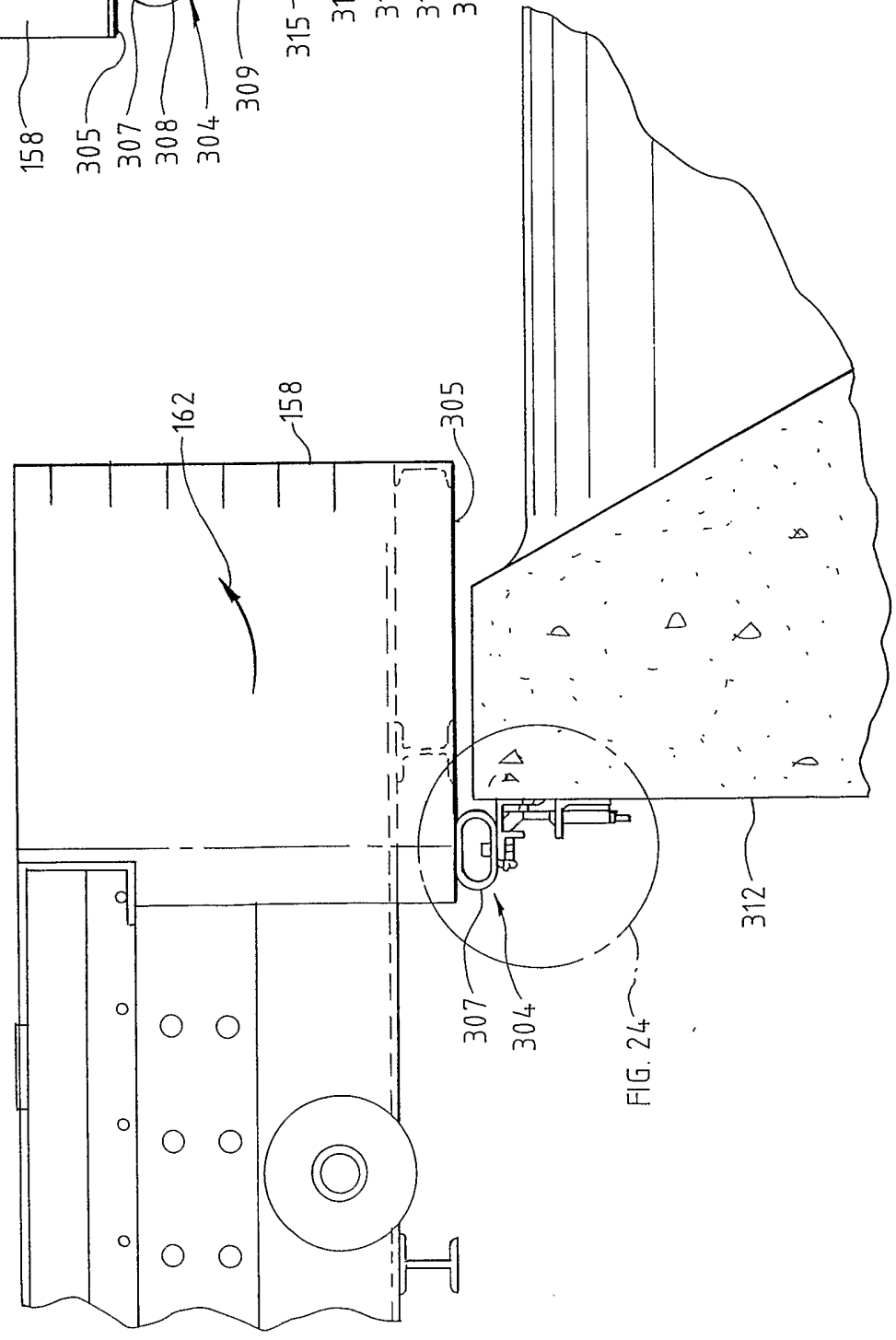
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FIG. 24

FIG. 25

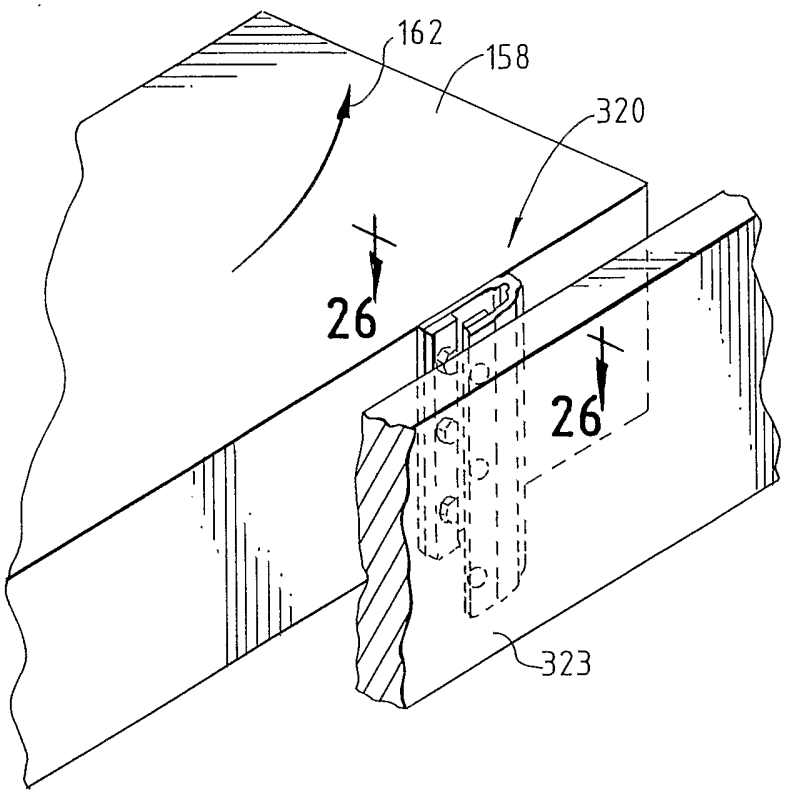


FIG. 26

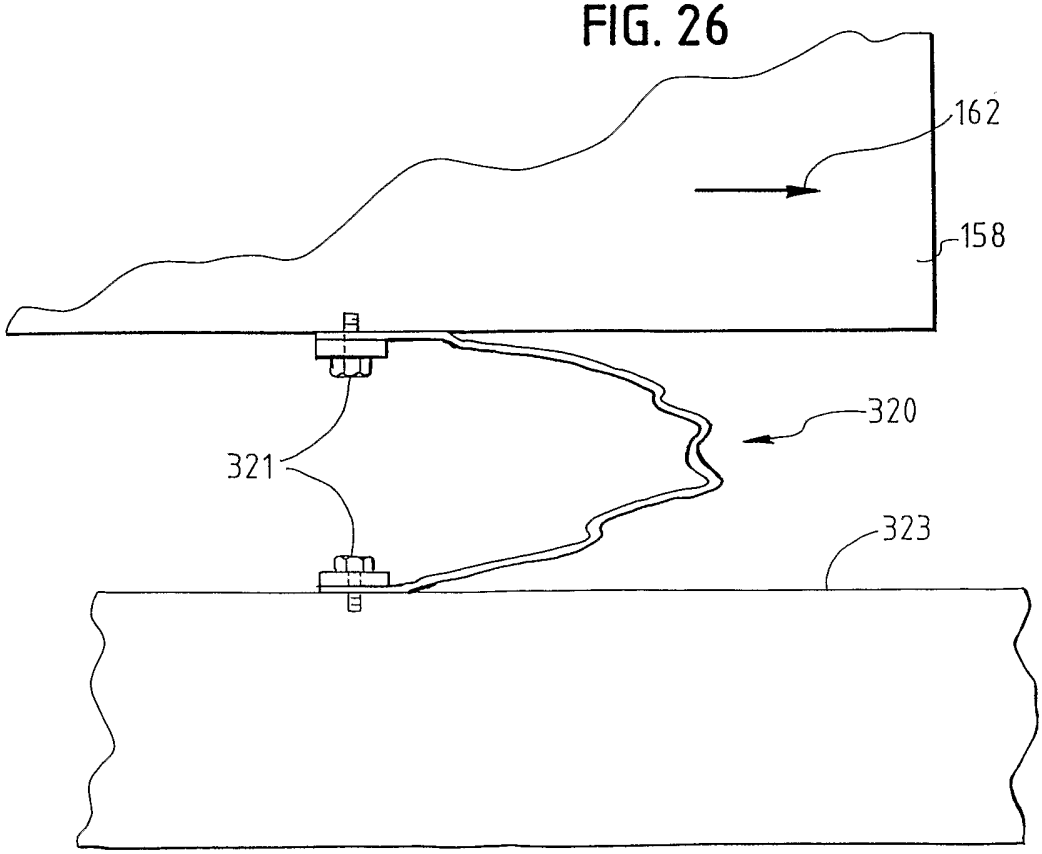

FIG. 27

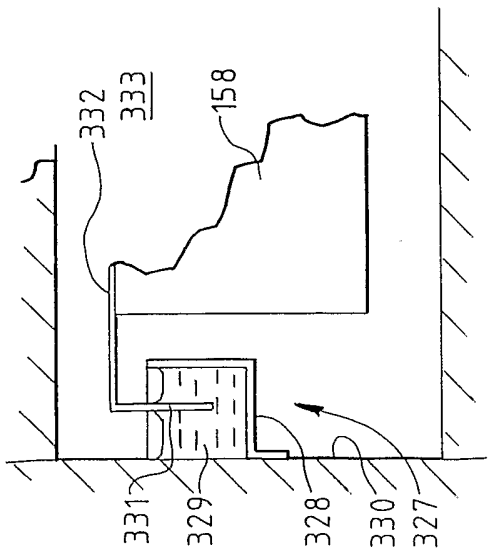


FIG. 28

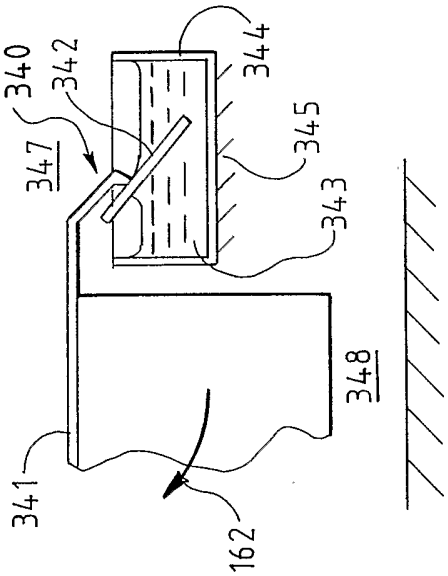


FIG. 30

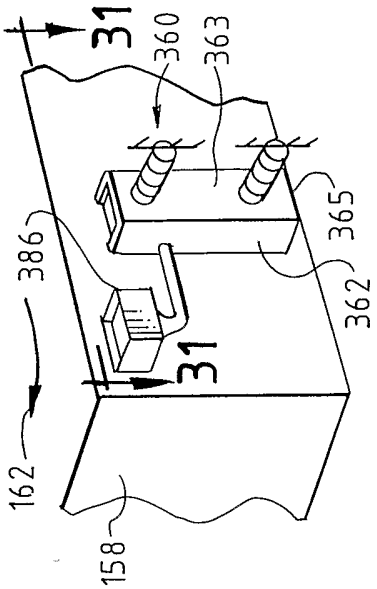


FIG. 29

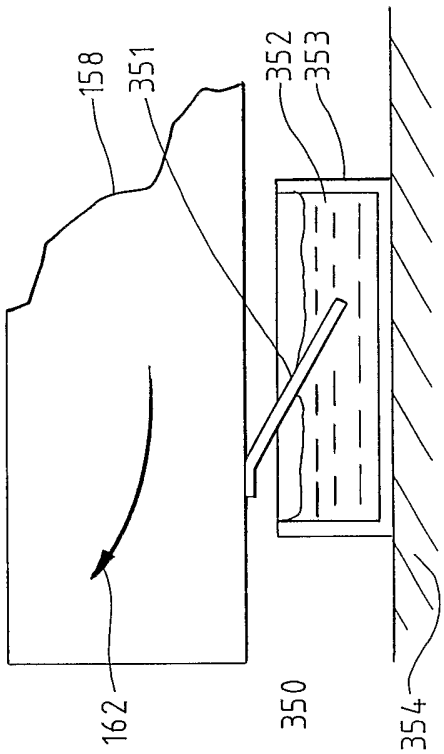


FIG. 31

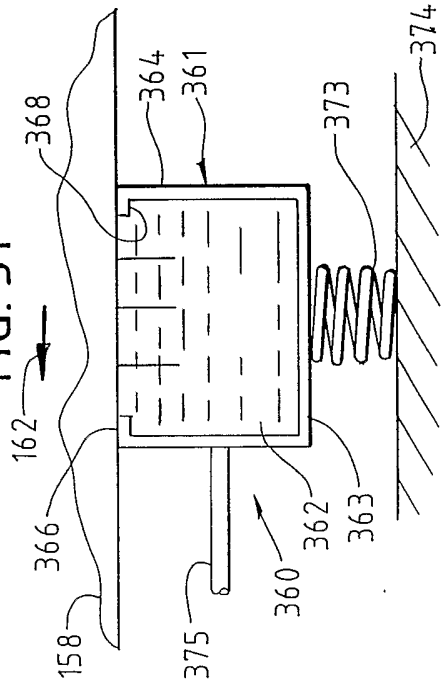

FIG. 32

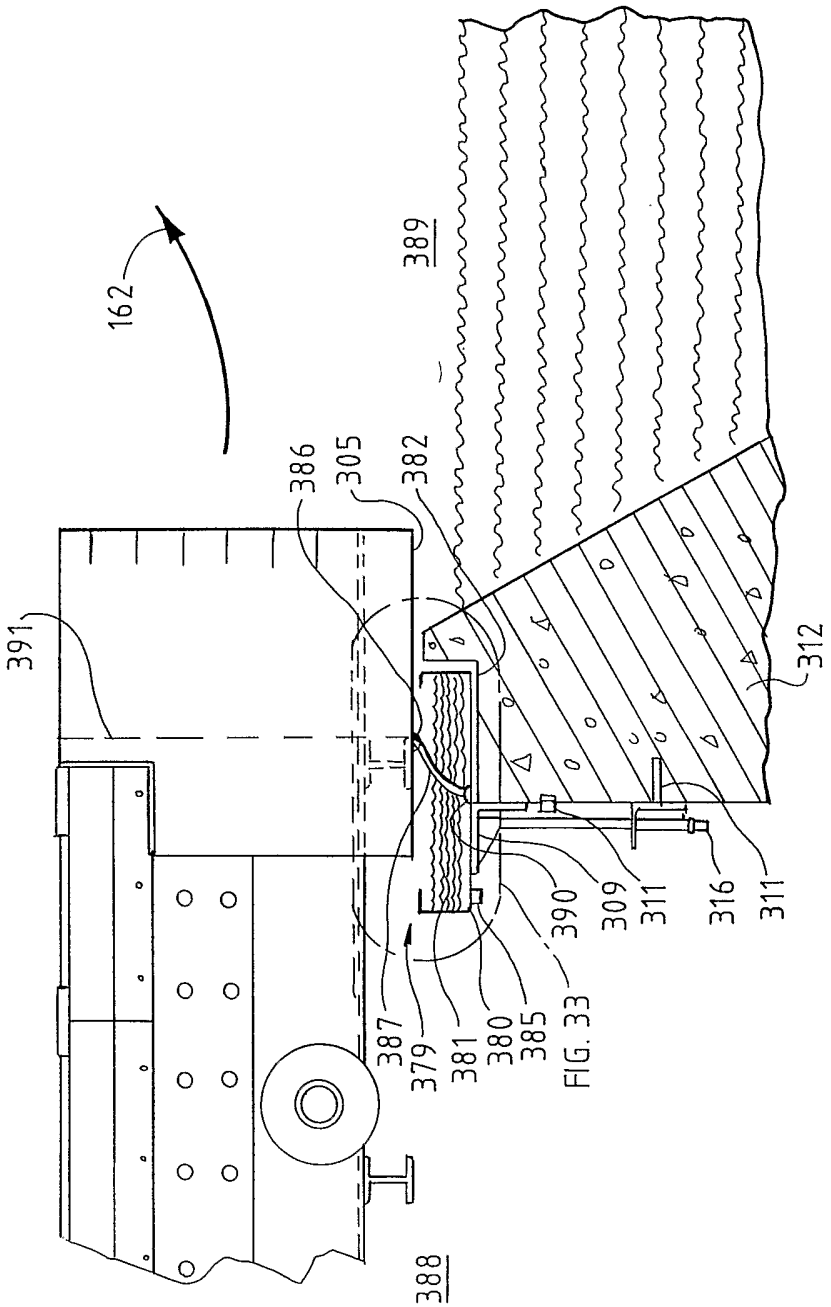
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FIG. 33

FIG. 33

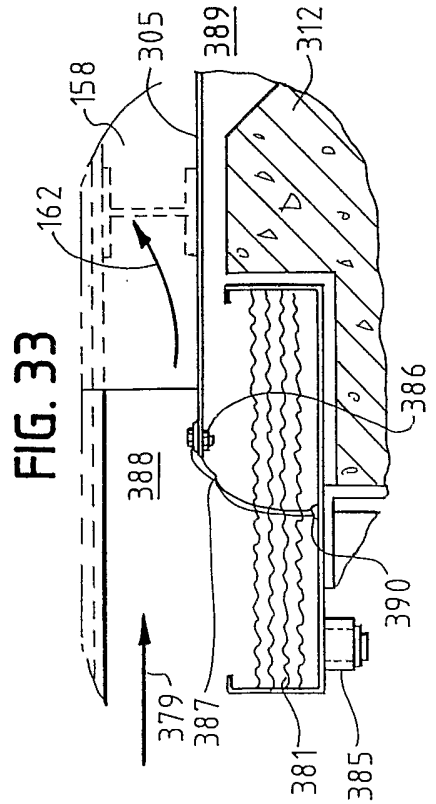


FIG. 34

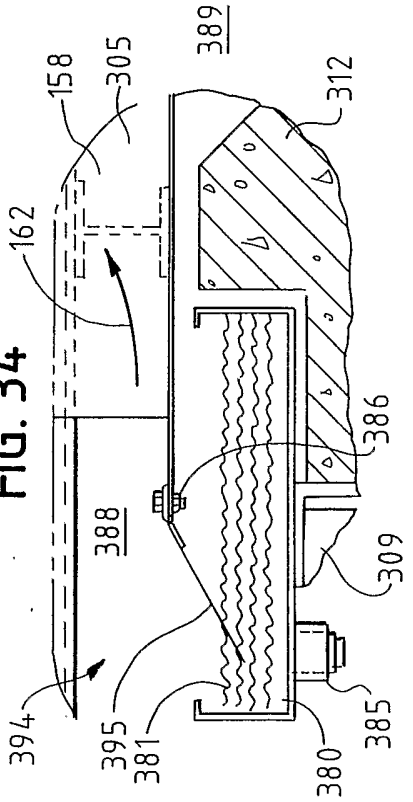


FIG. 35

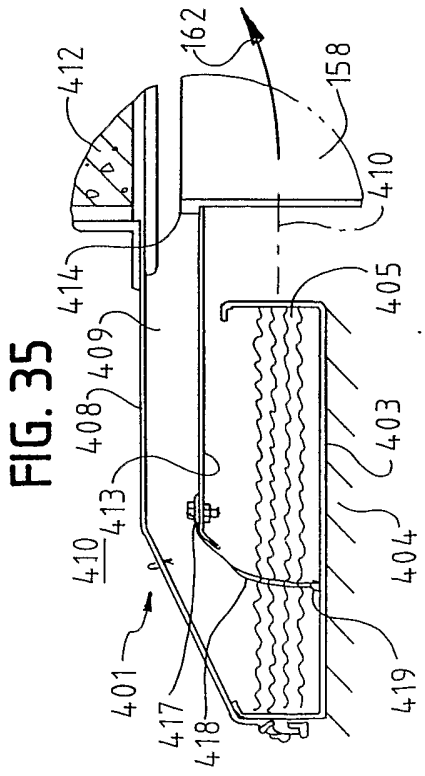


FIG. 36

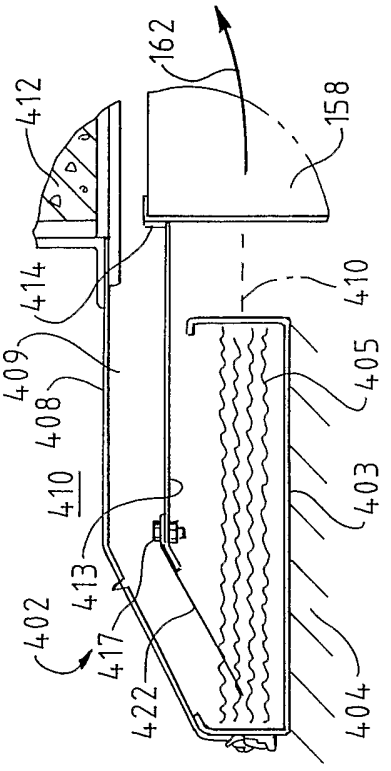

FIG. 37

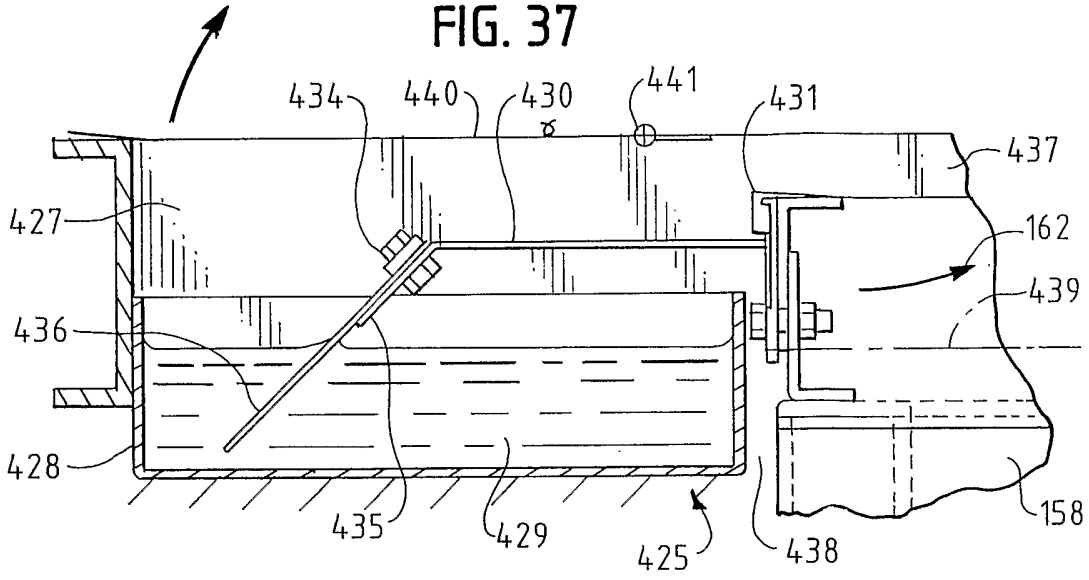
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FIG. 38

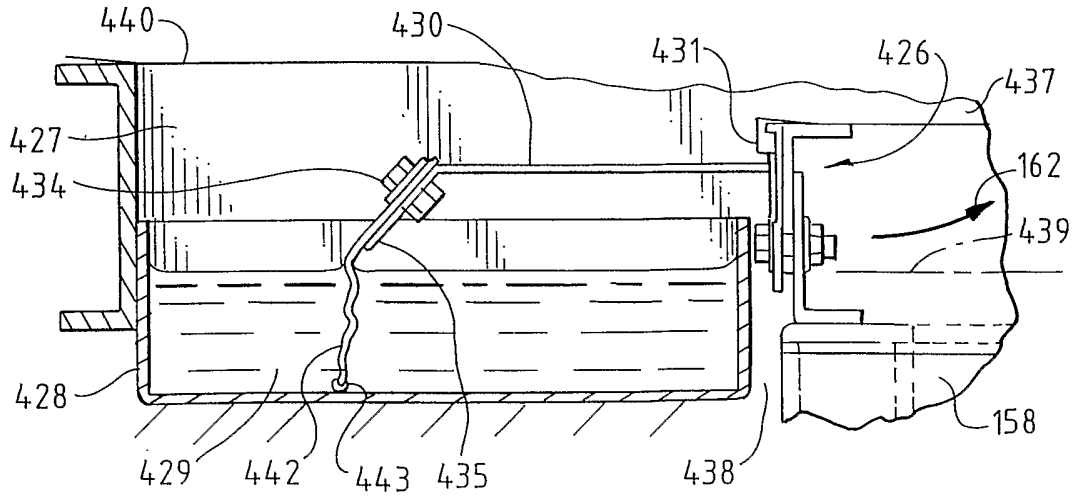
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FIG. 39

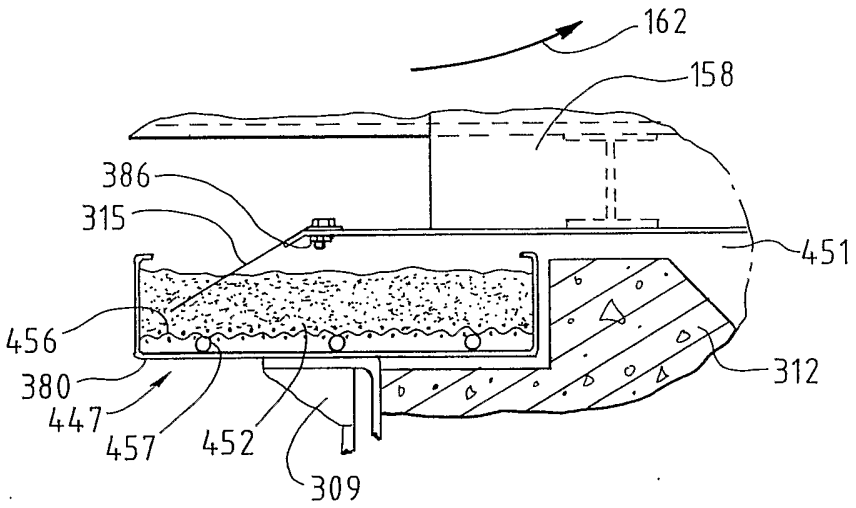
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FIG. 40

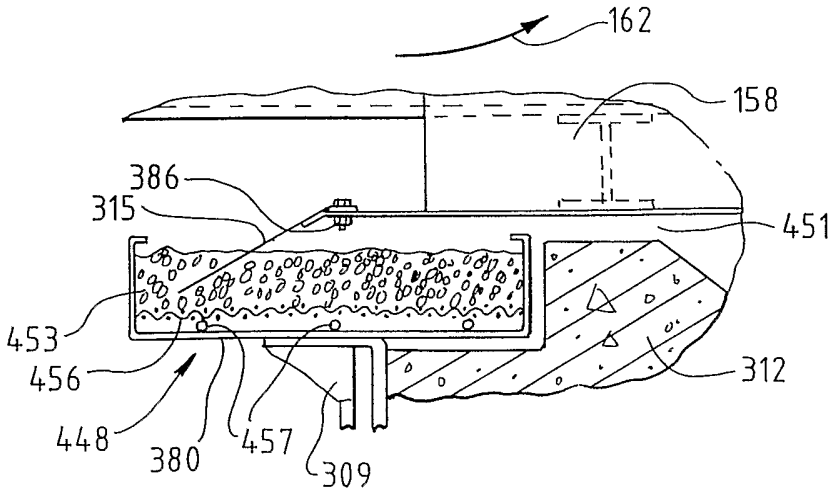
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FIG. 41

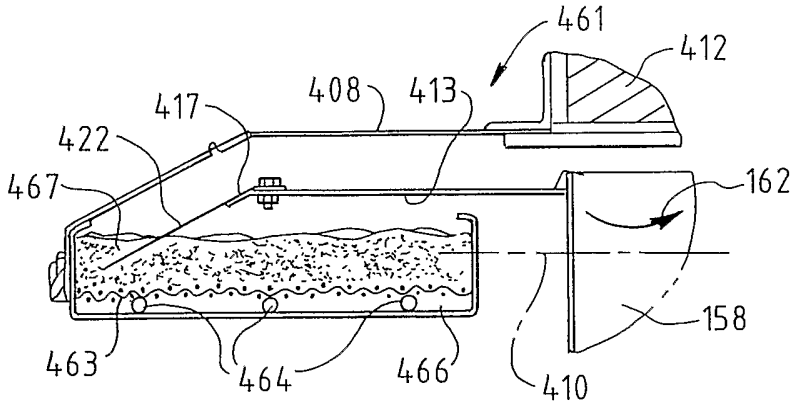
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FIG. 42

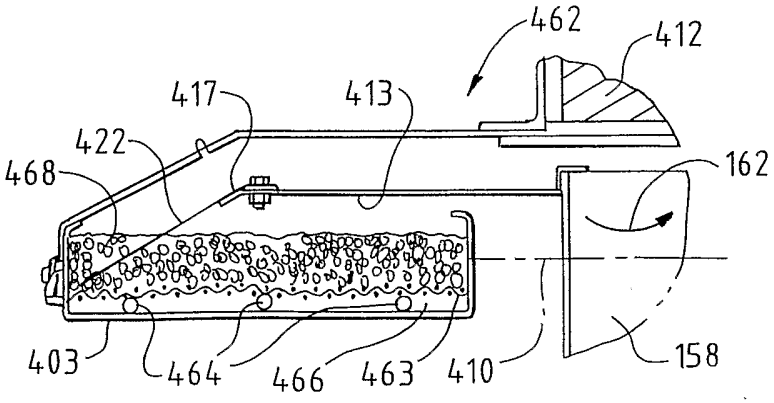
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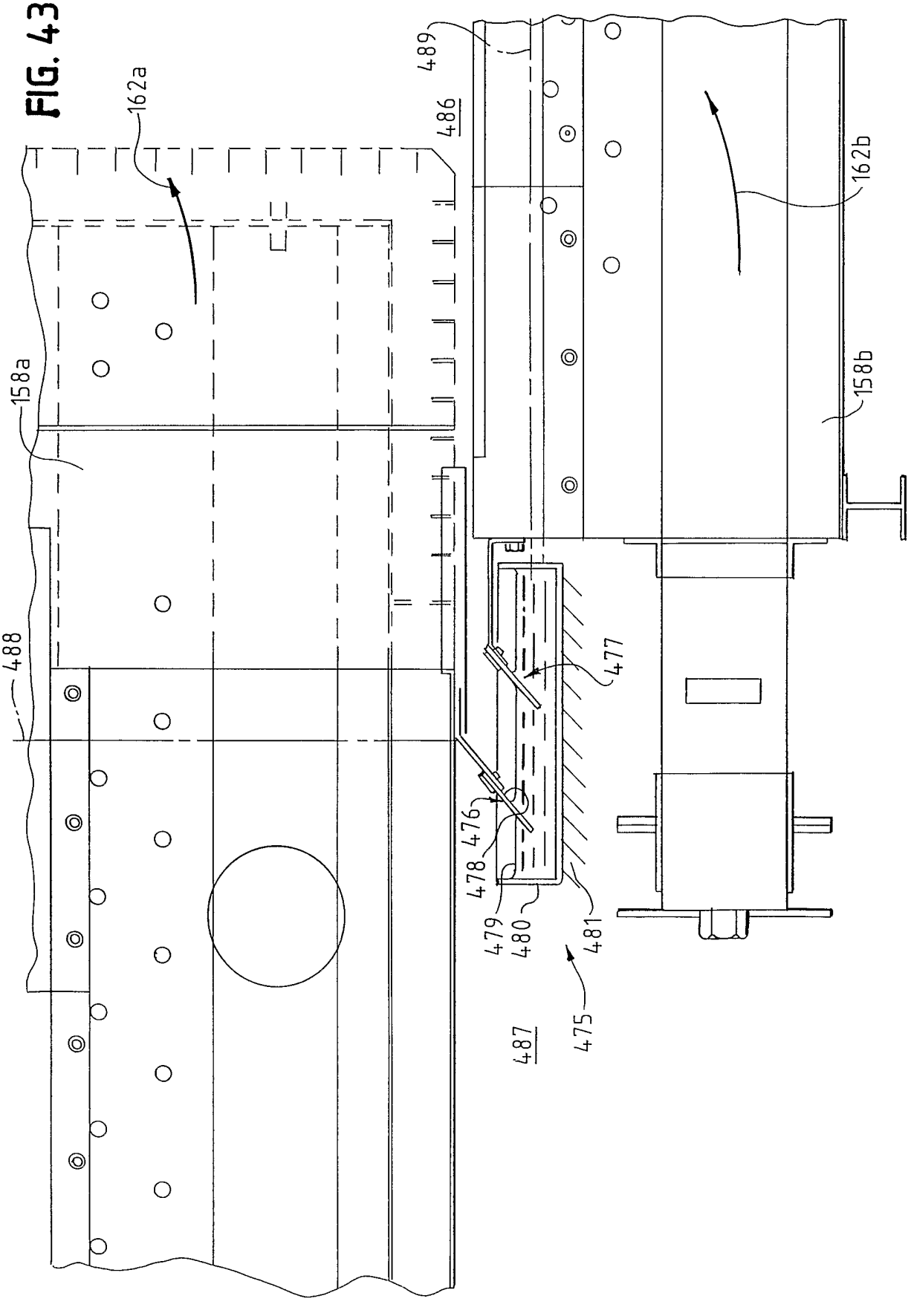
FIG. 43



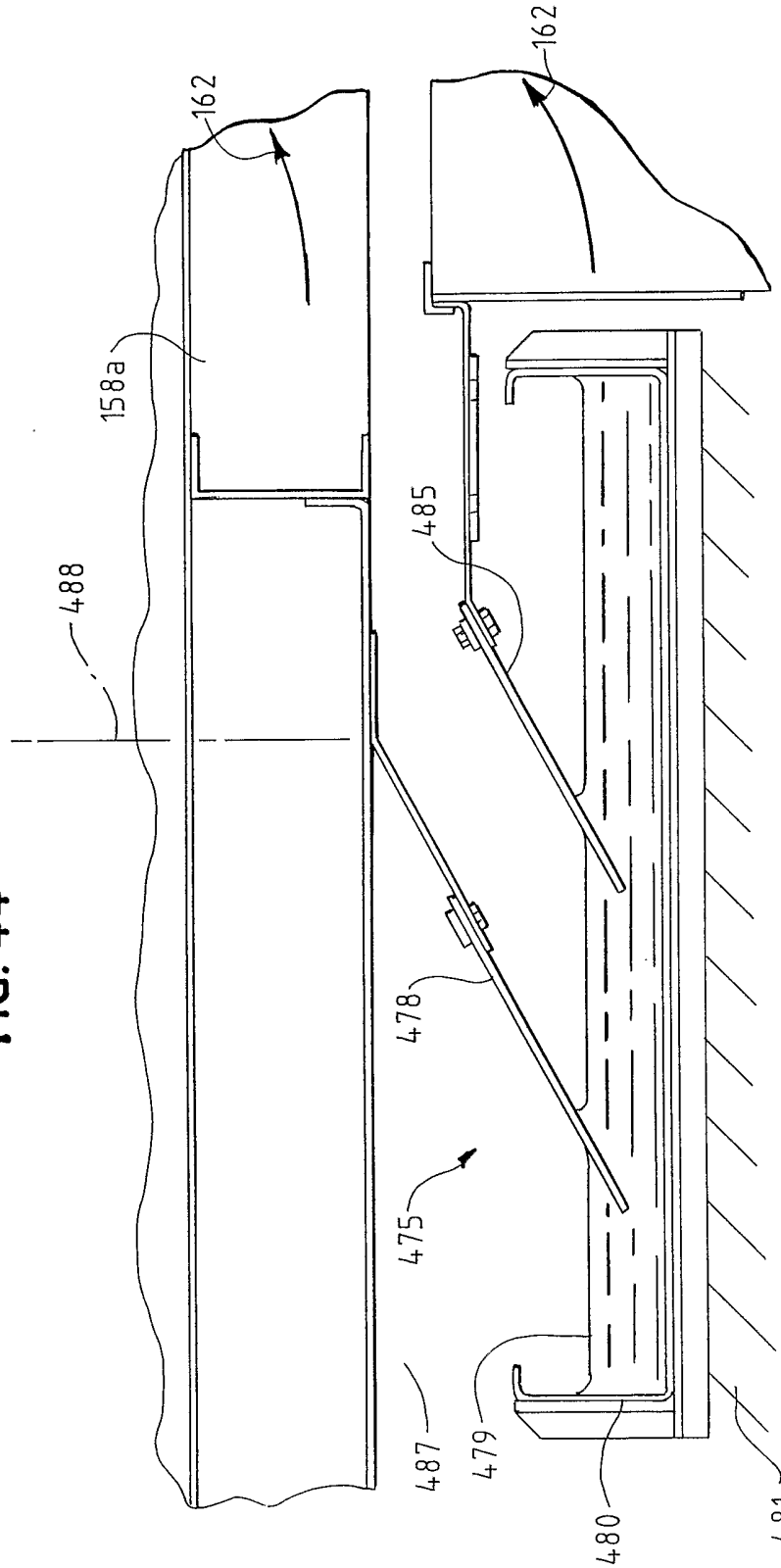
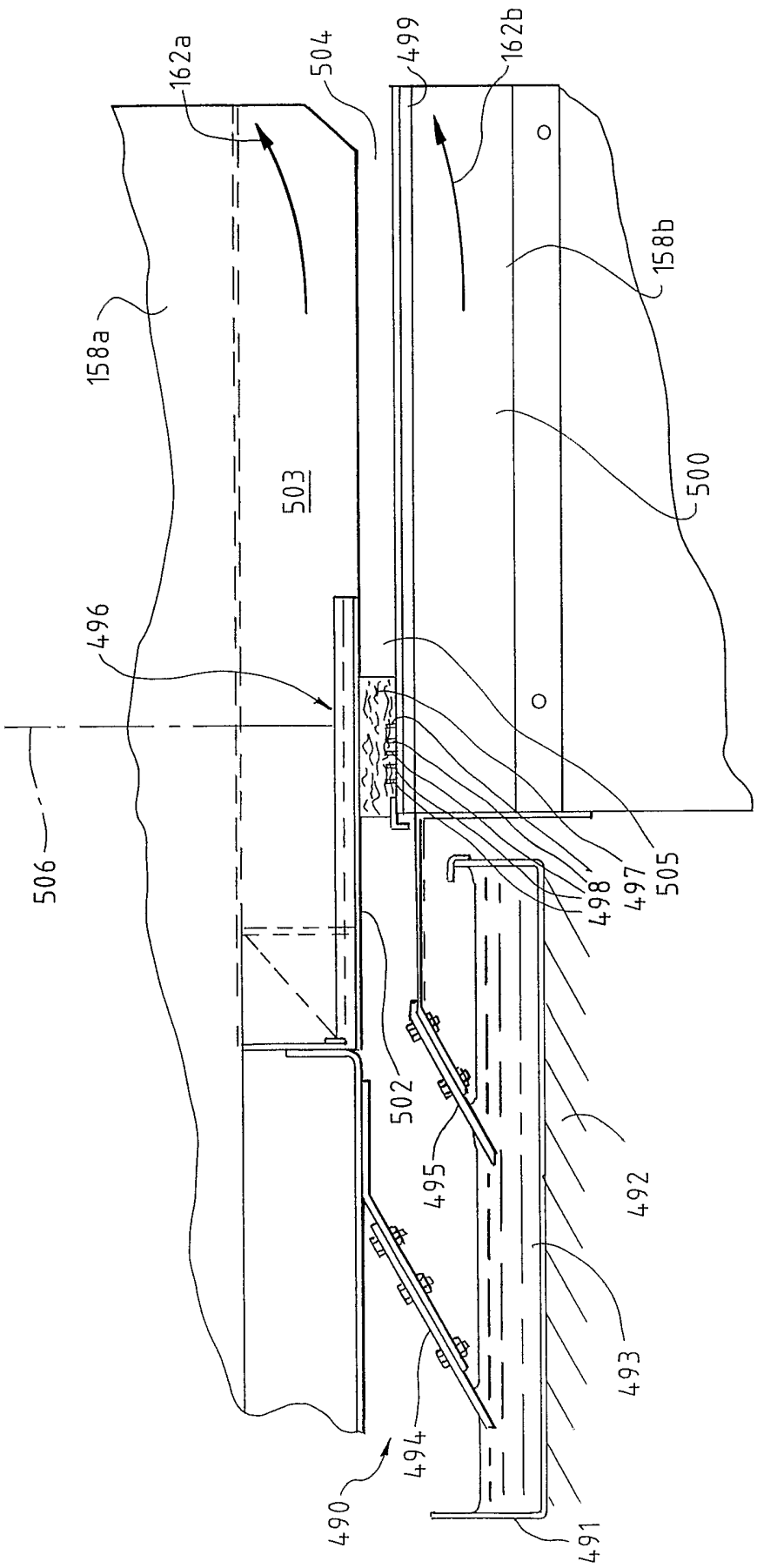



FIG. 44

FIG. 45


162a
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162b
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FIG. 46

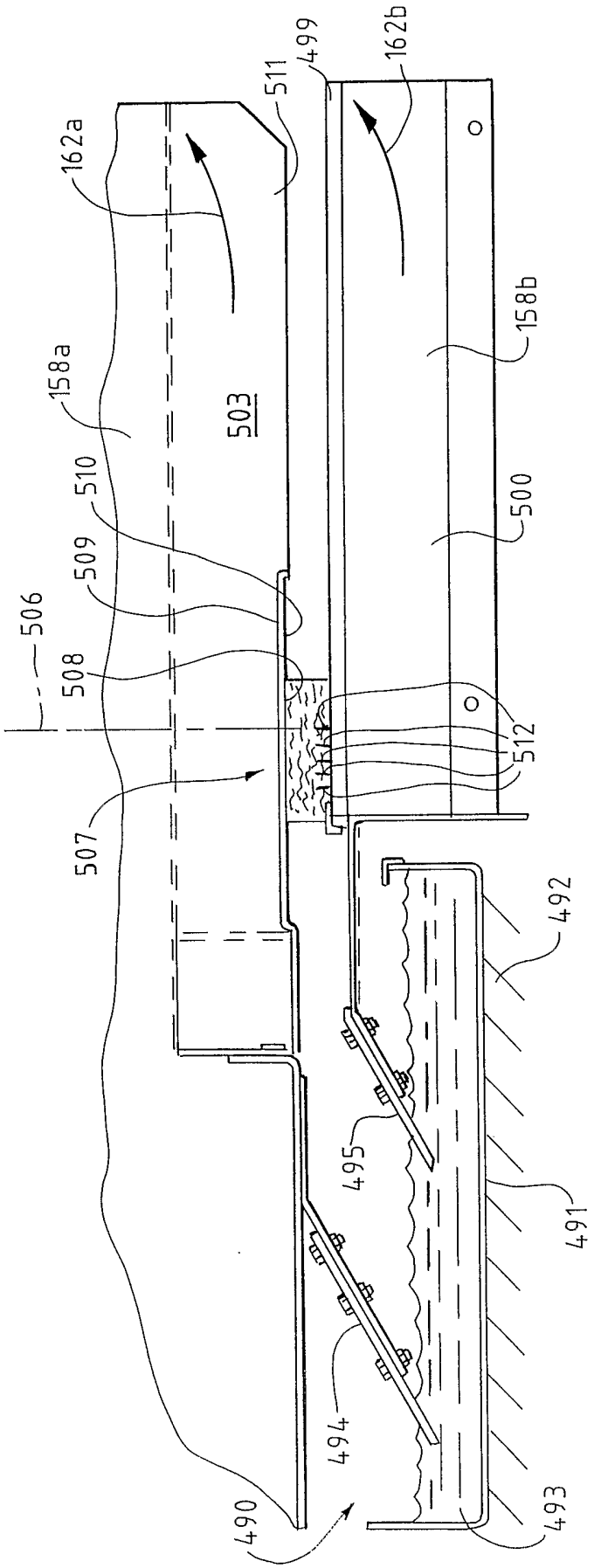
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FIG. 47

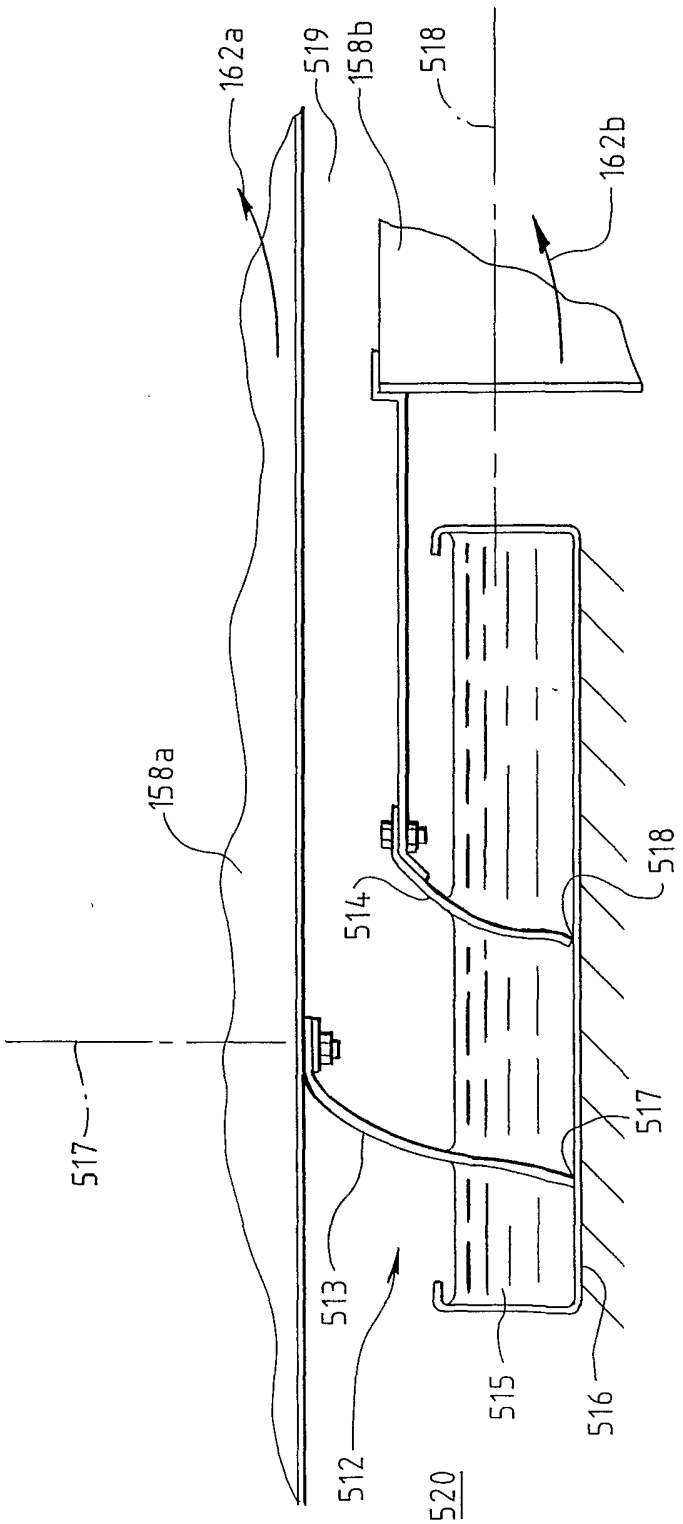

FIG. 48

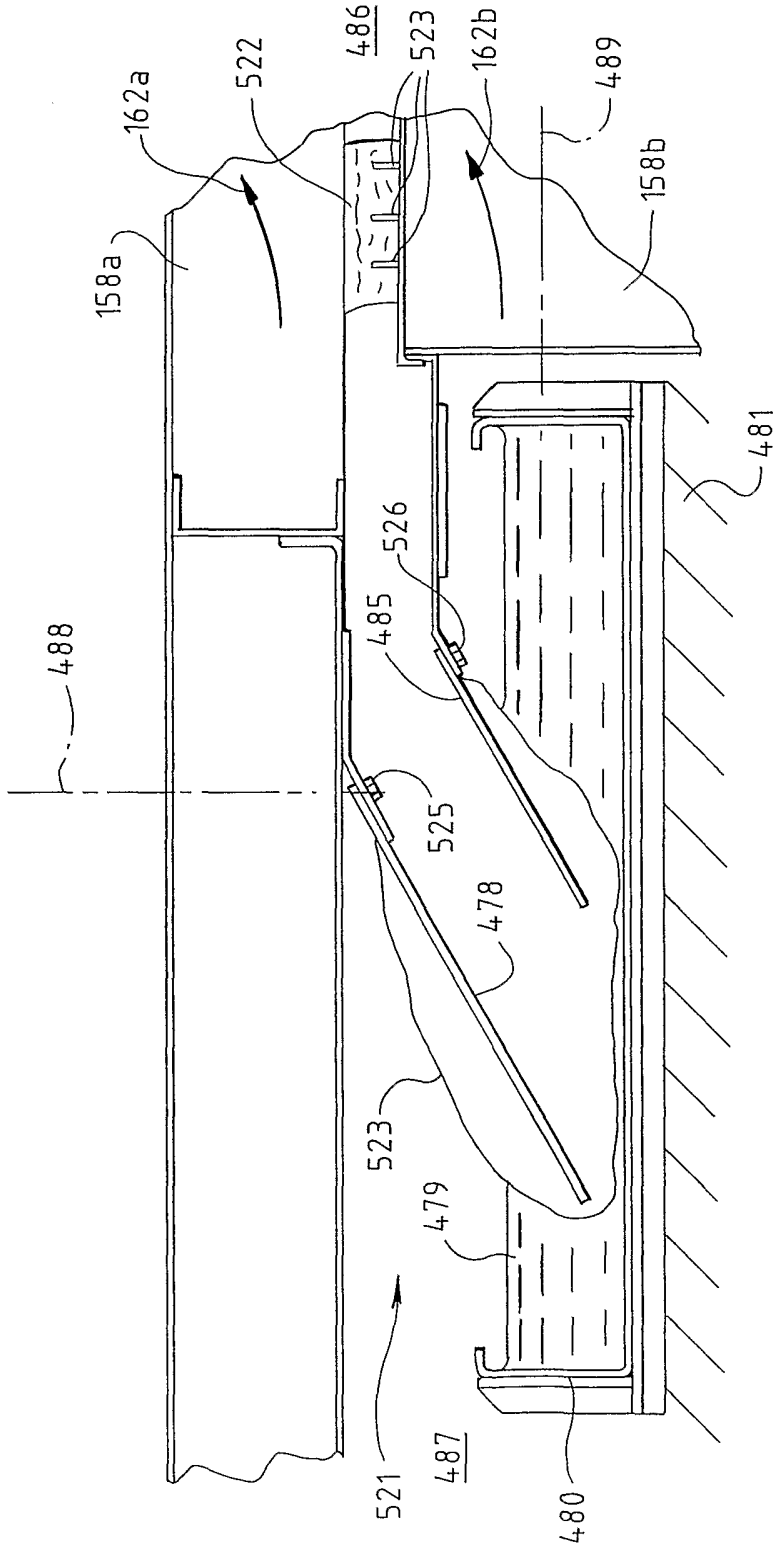
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FIG. 49

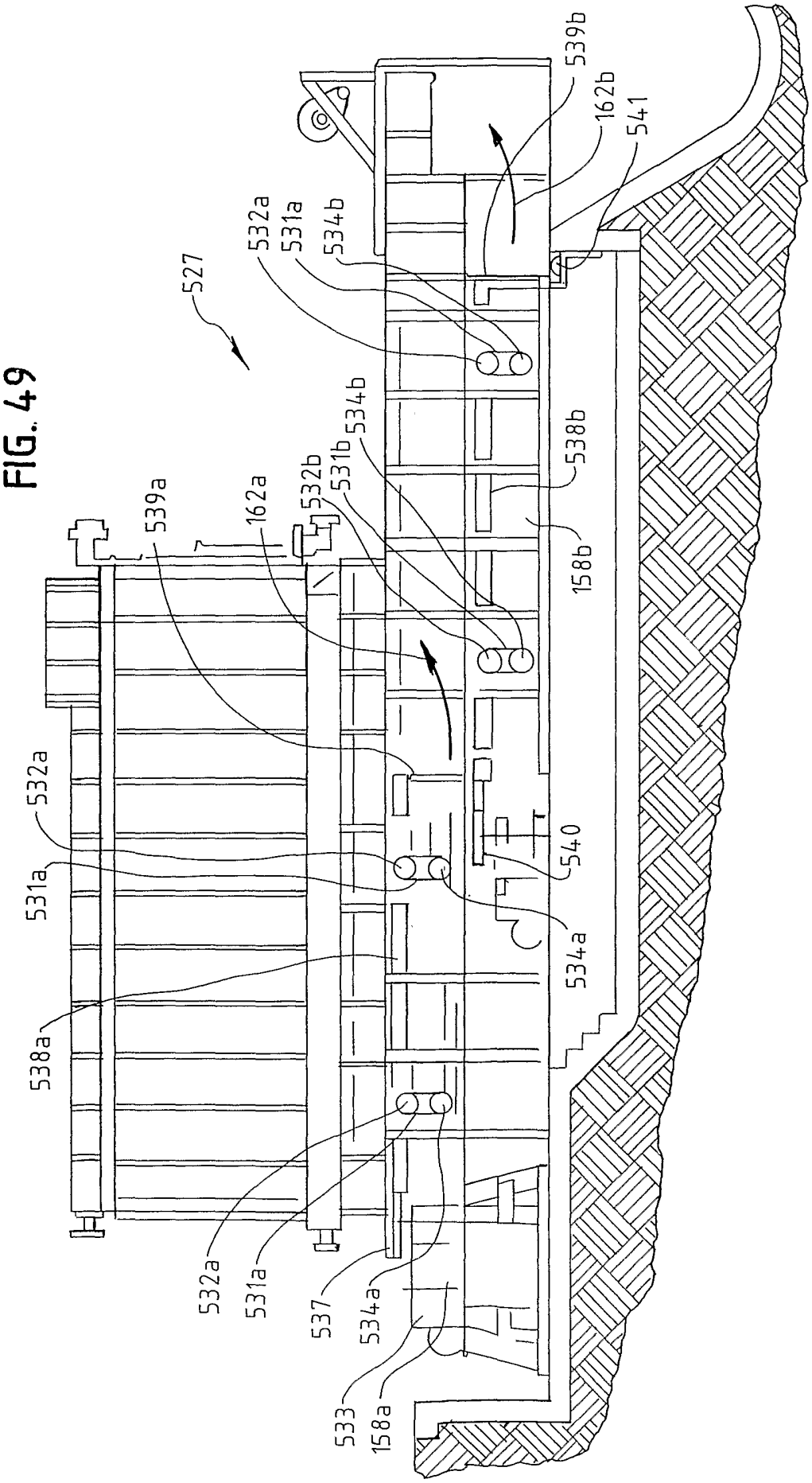
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FIG. 50

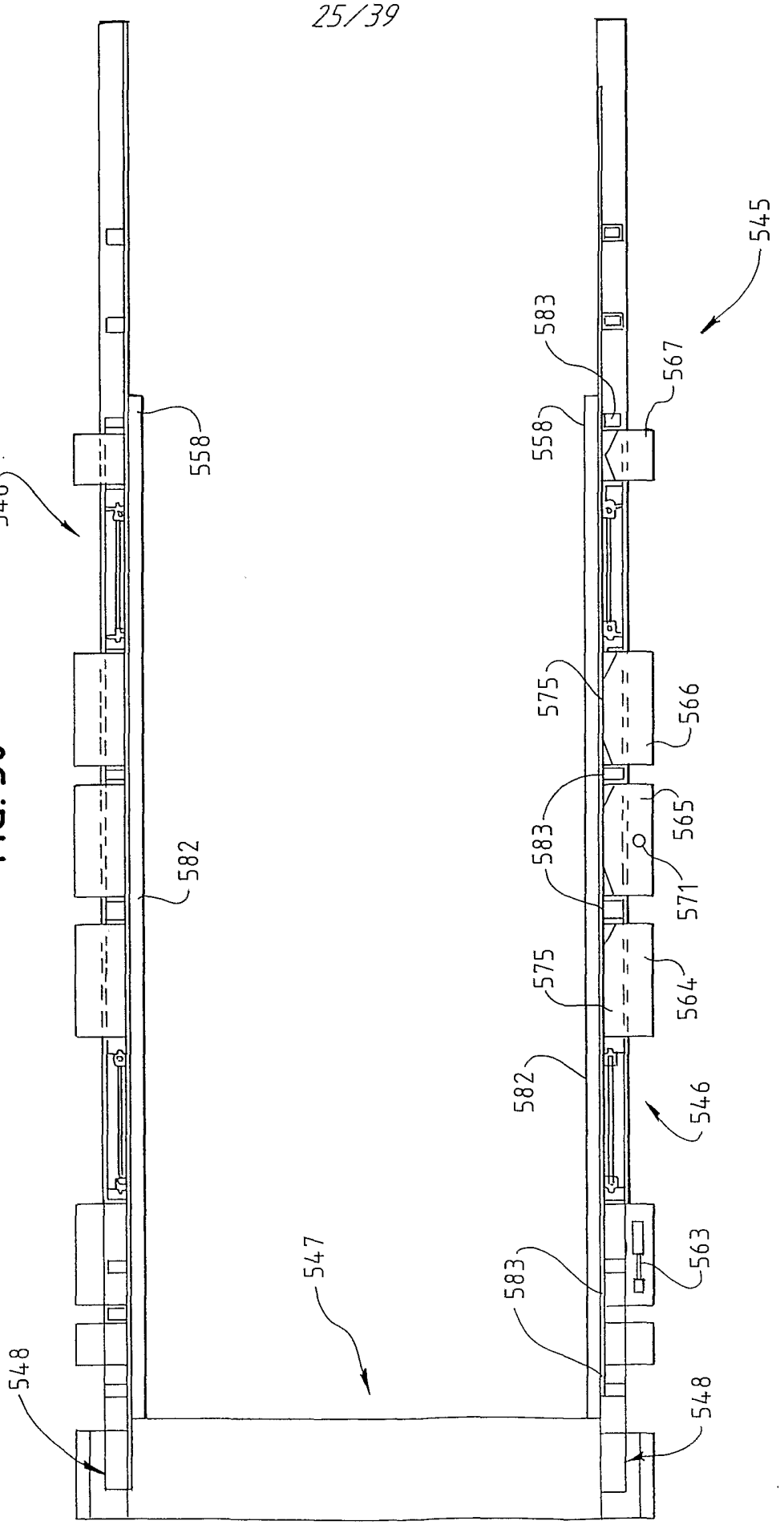
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FIG. 51

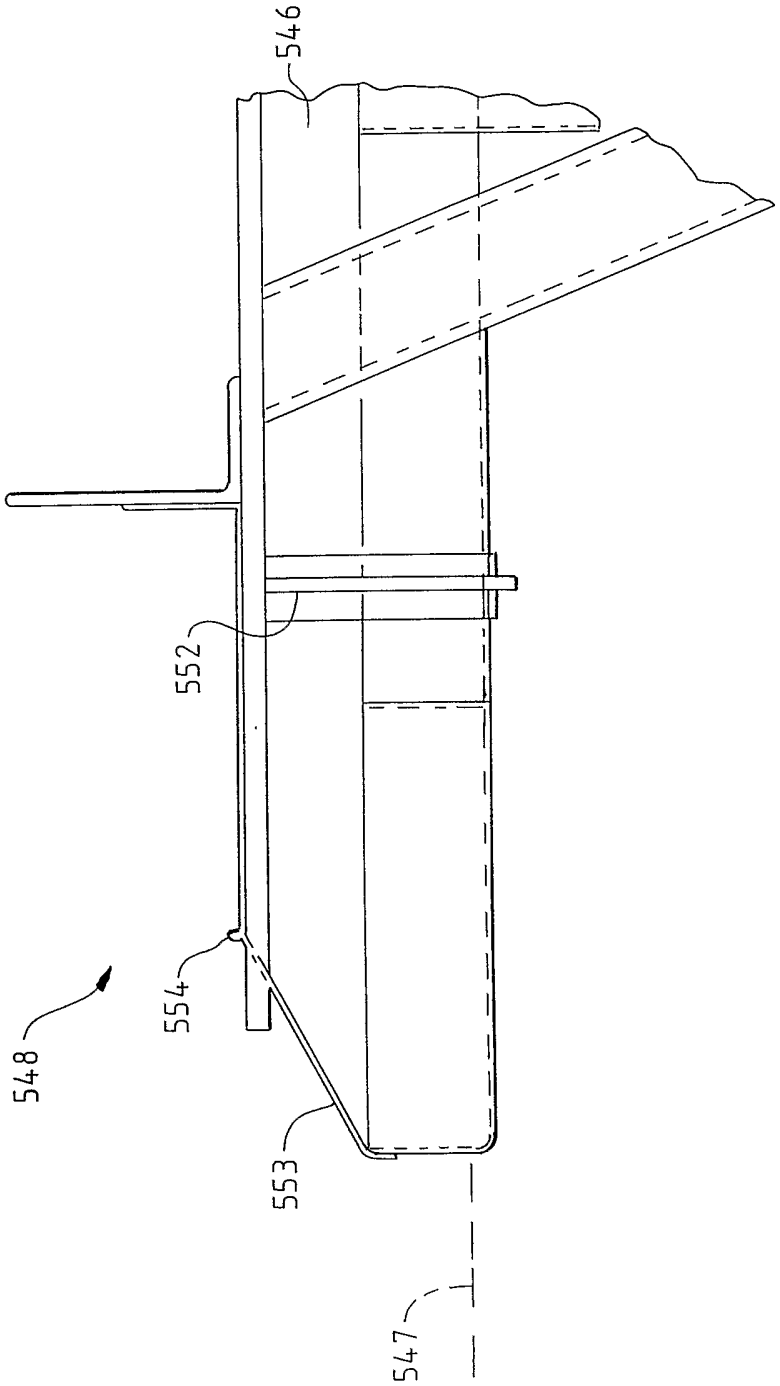


FIG. 53

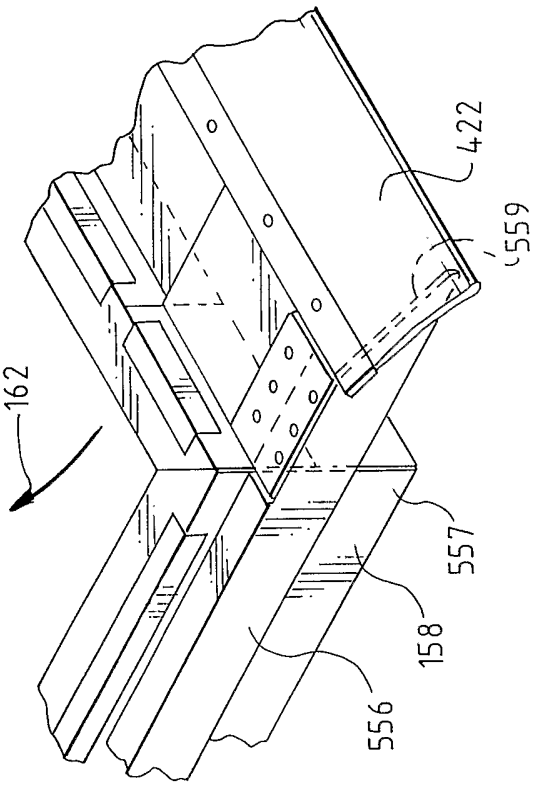
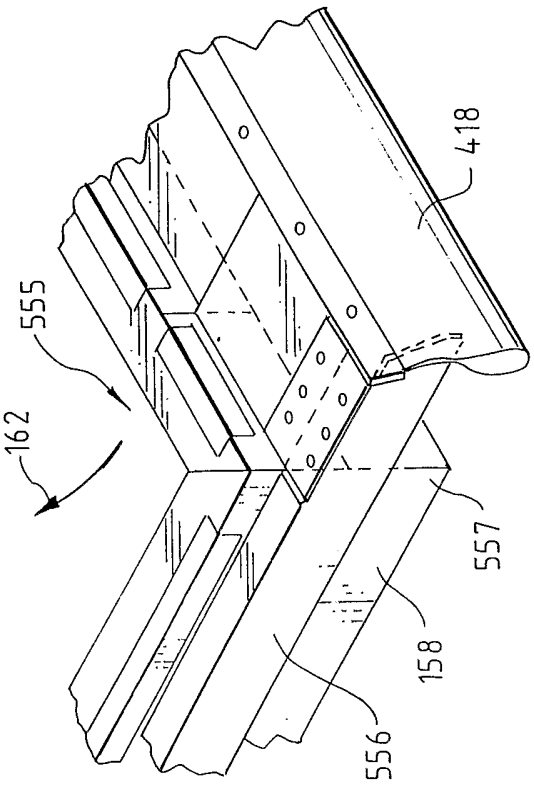



FIG. 52



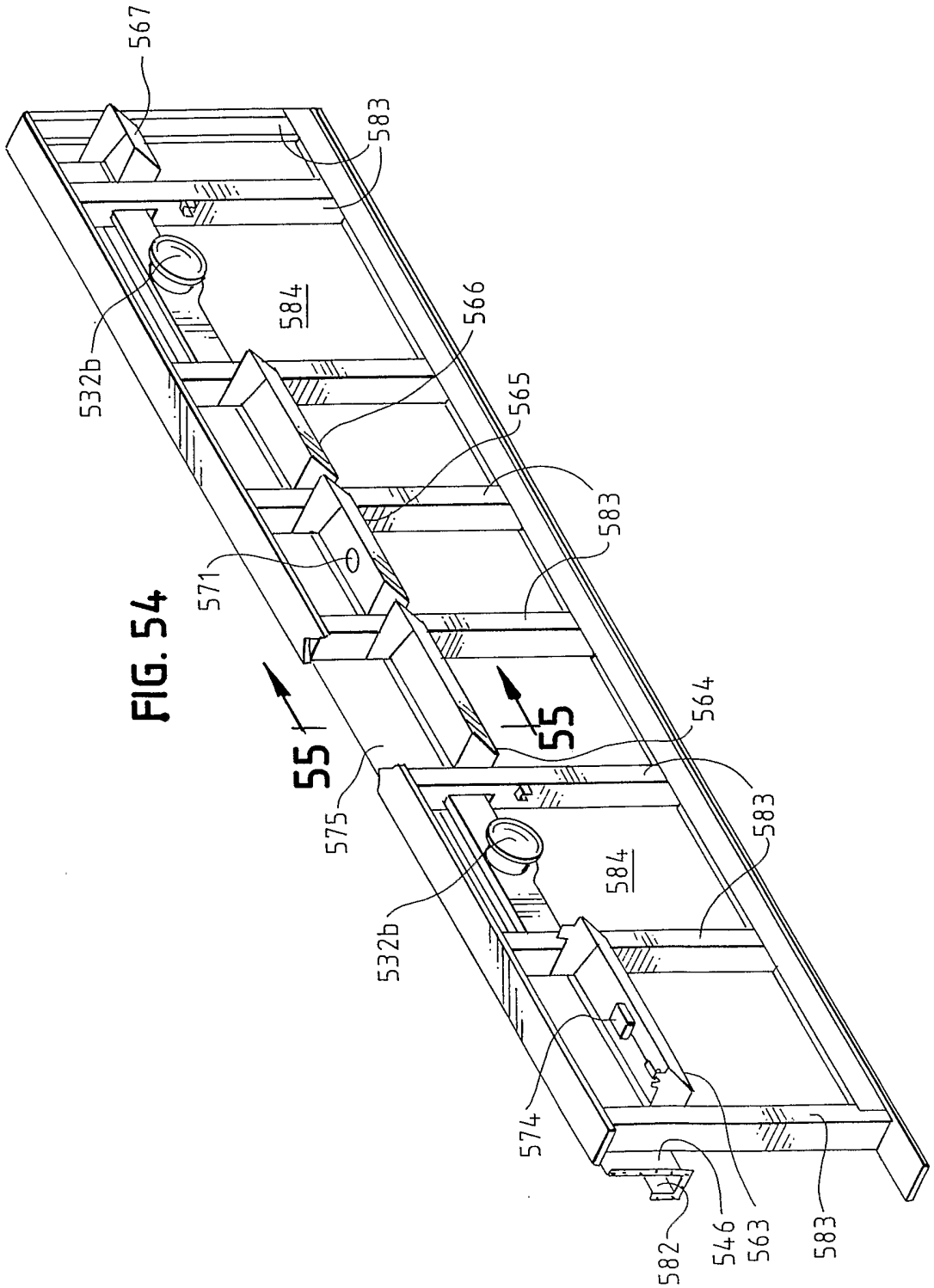

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FIG. 54

FIG. 55

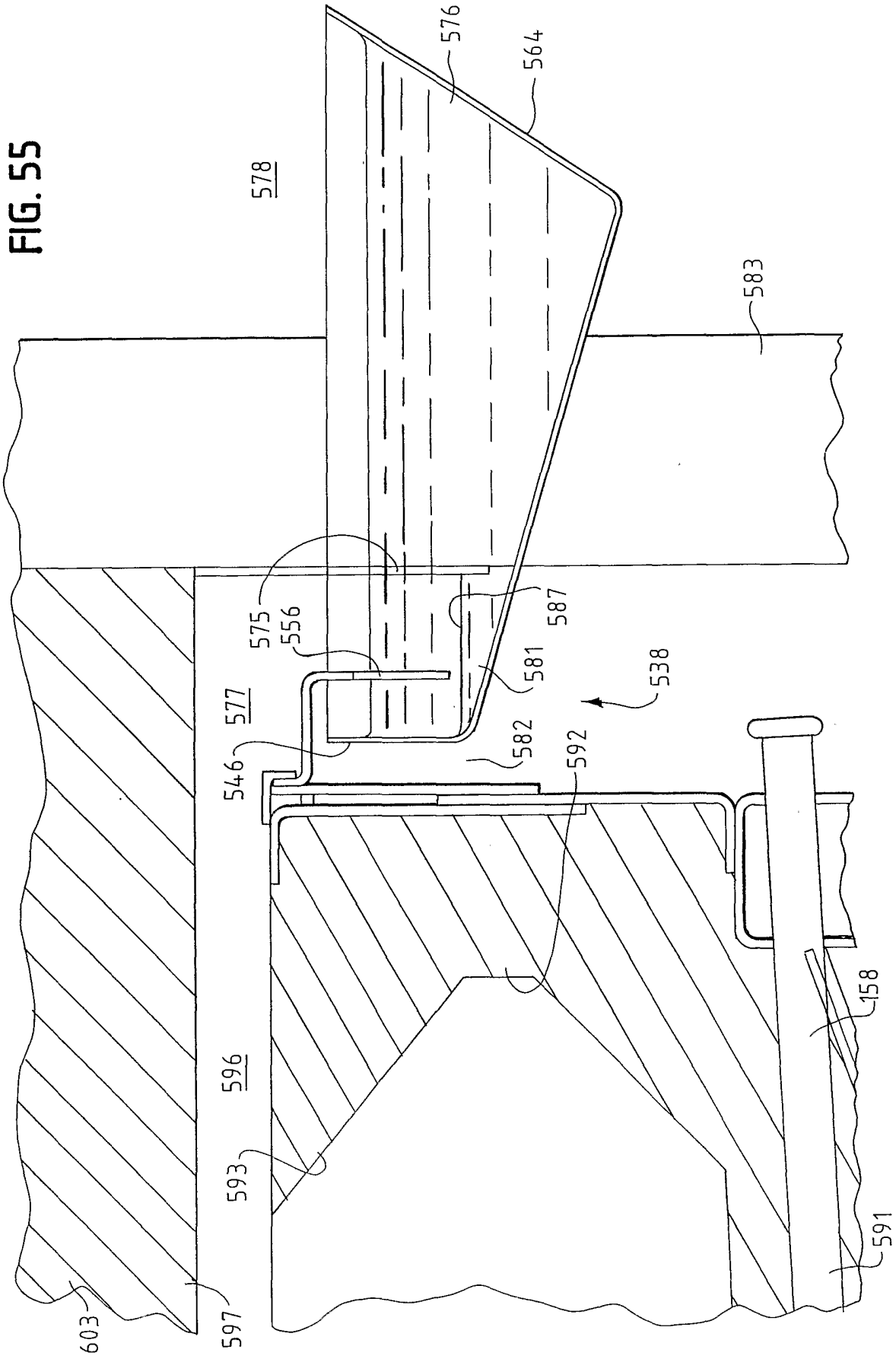
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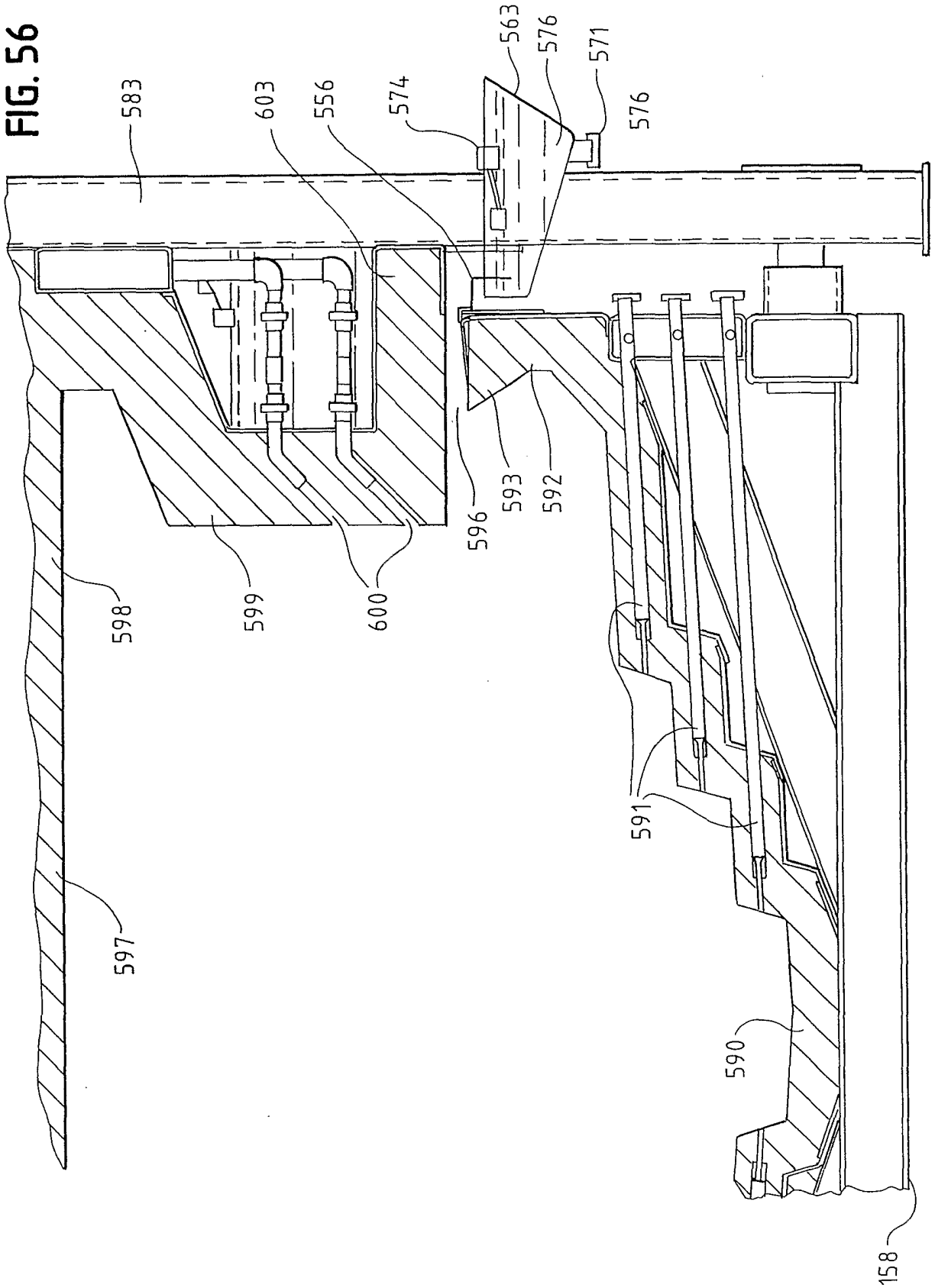
FIG. 56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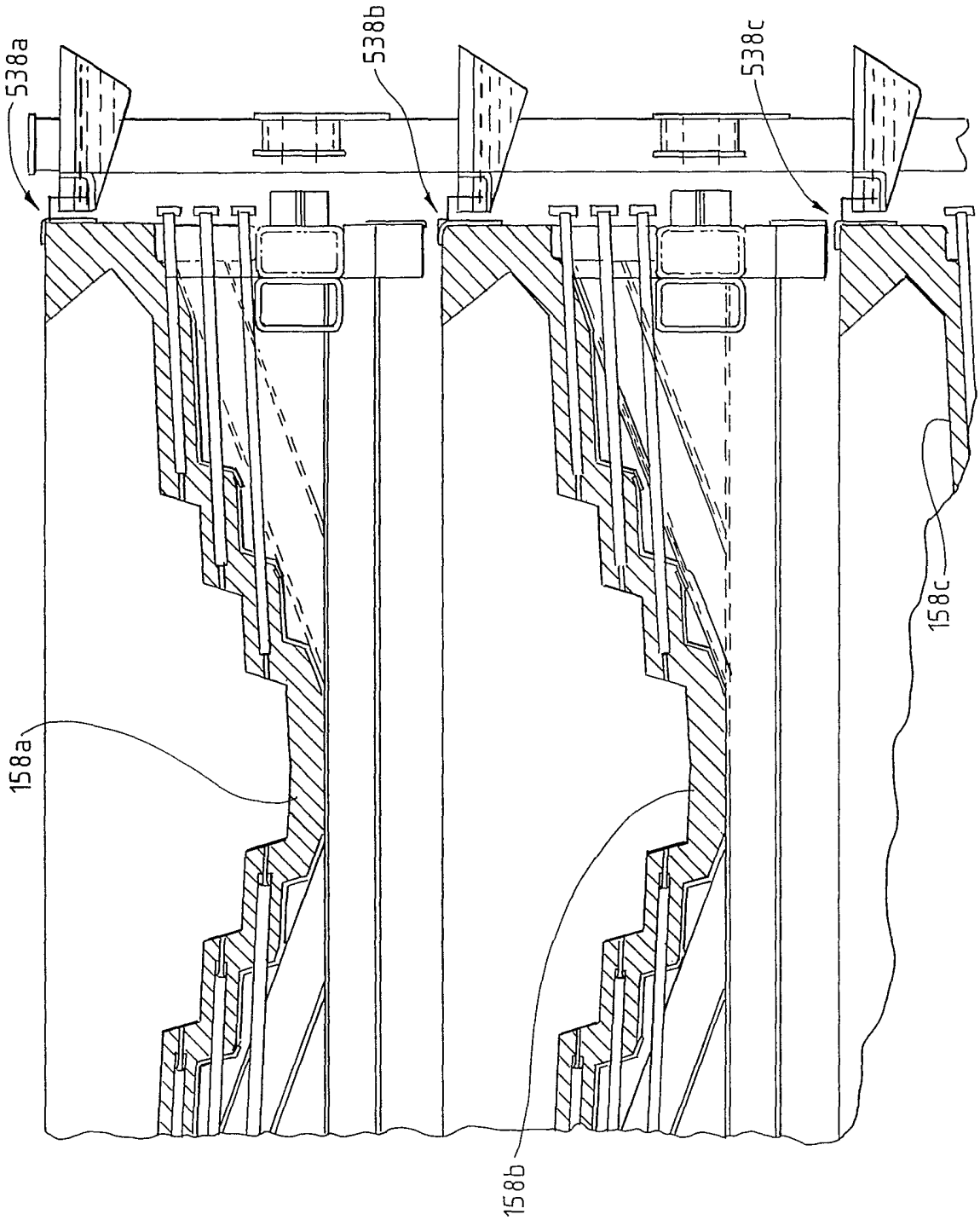


FIG. 57

FIG. 58

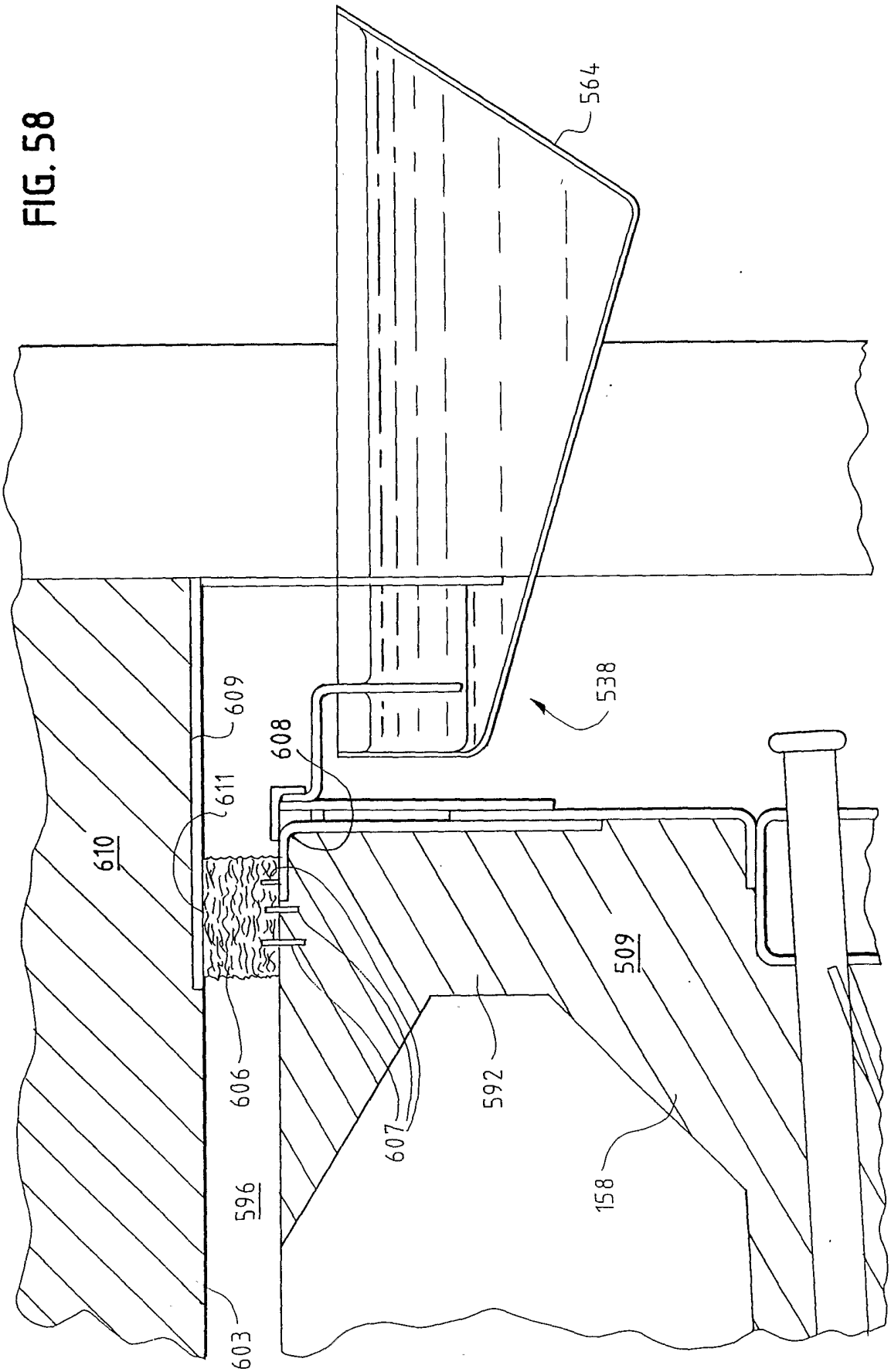

FIG. 59

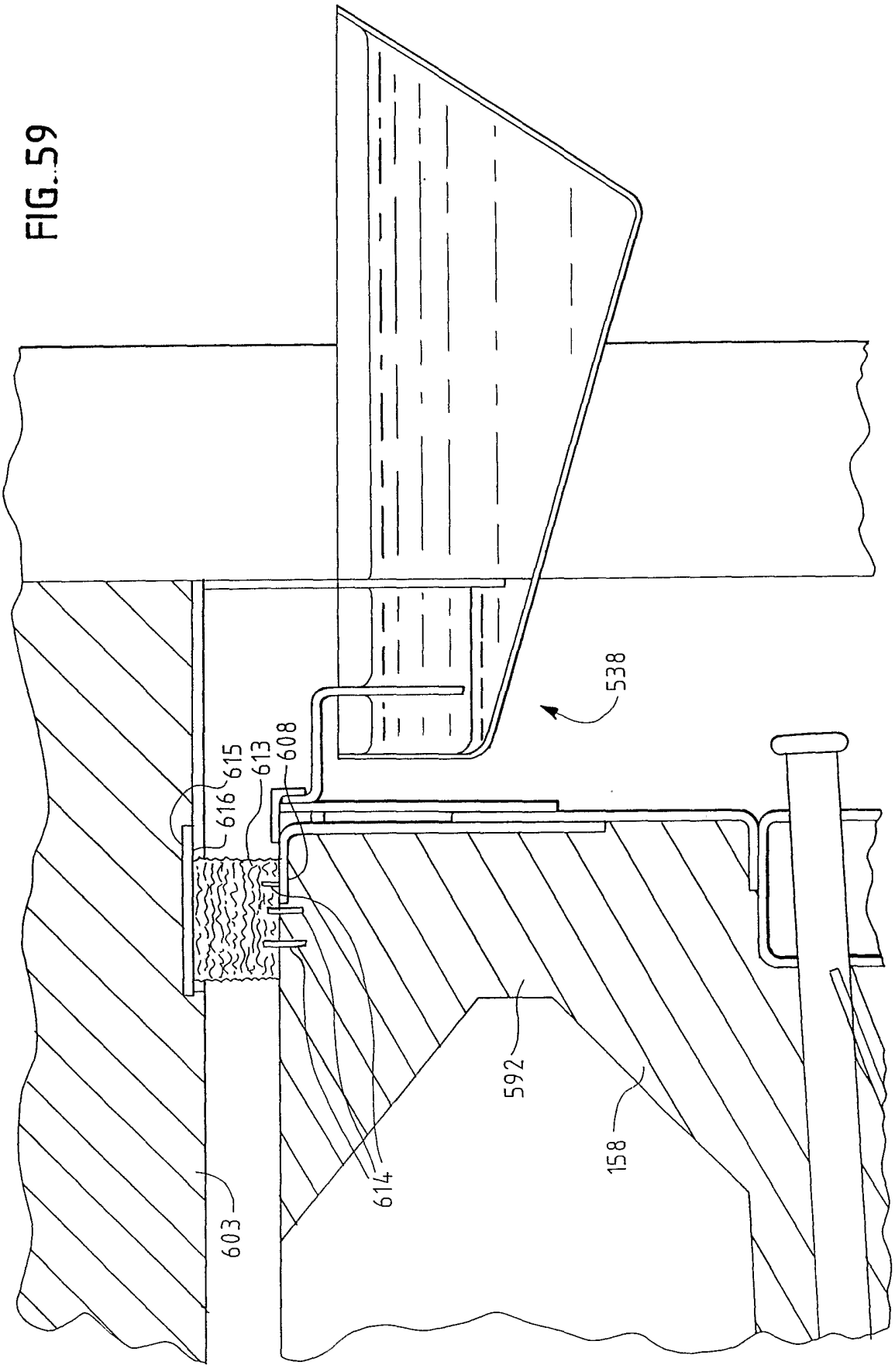

FIG. 60

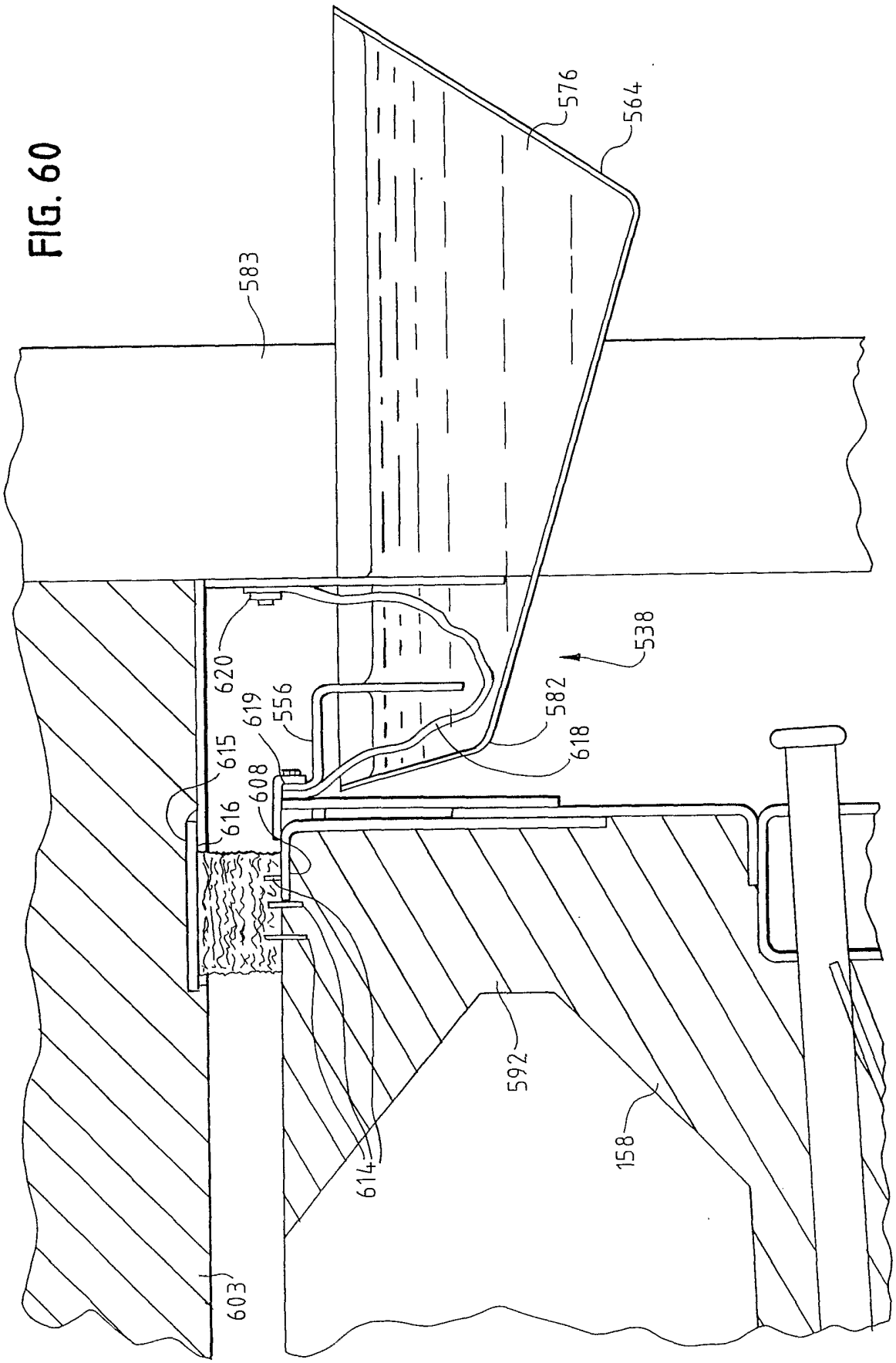

FIG. 61

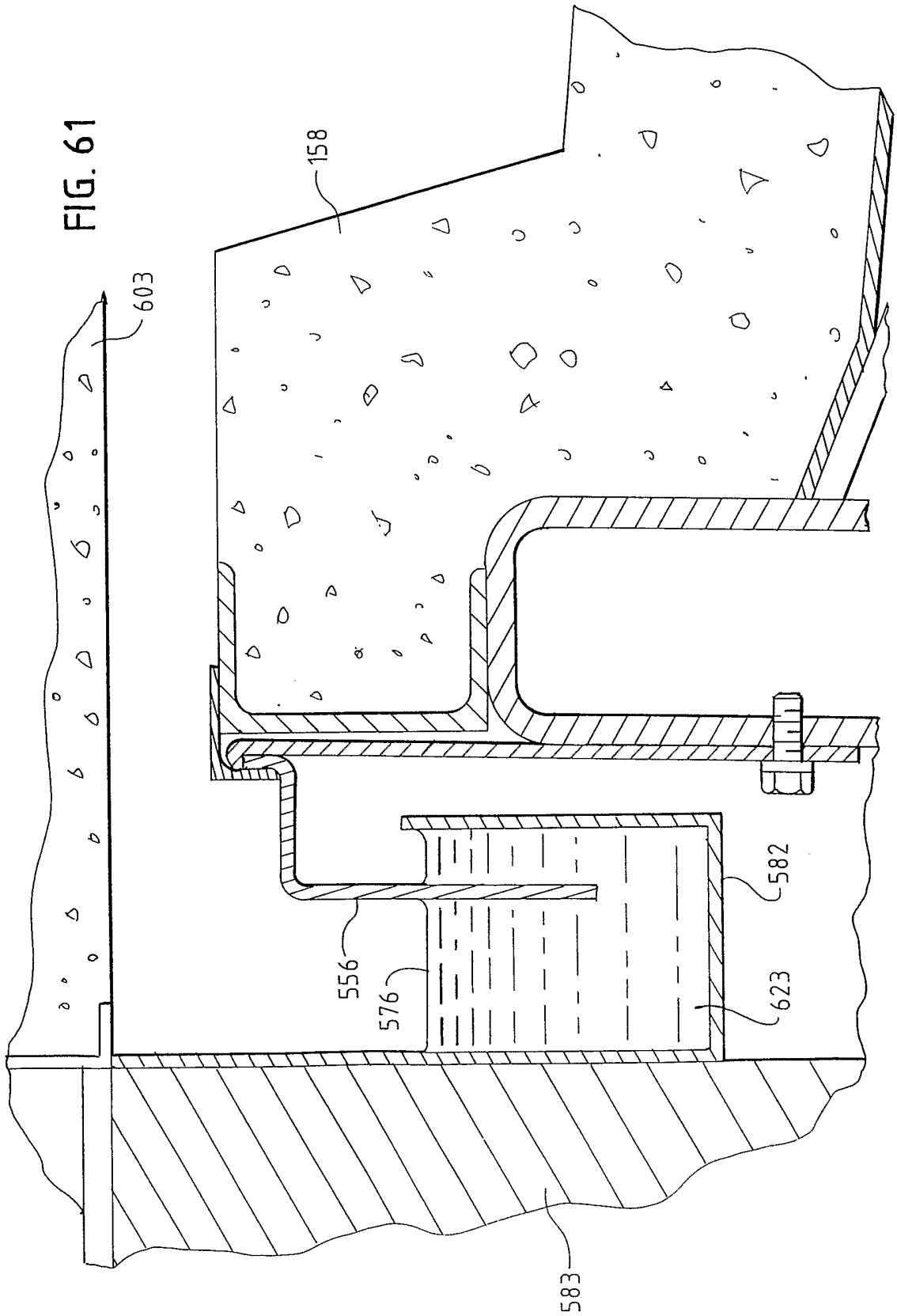

FIG. 62

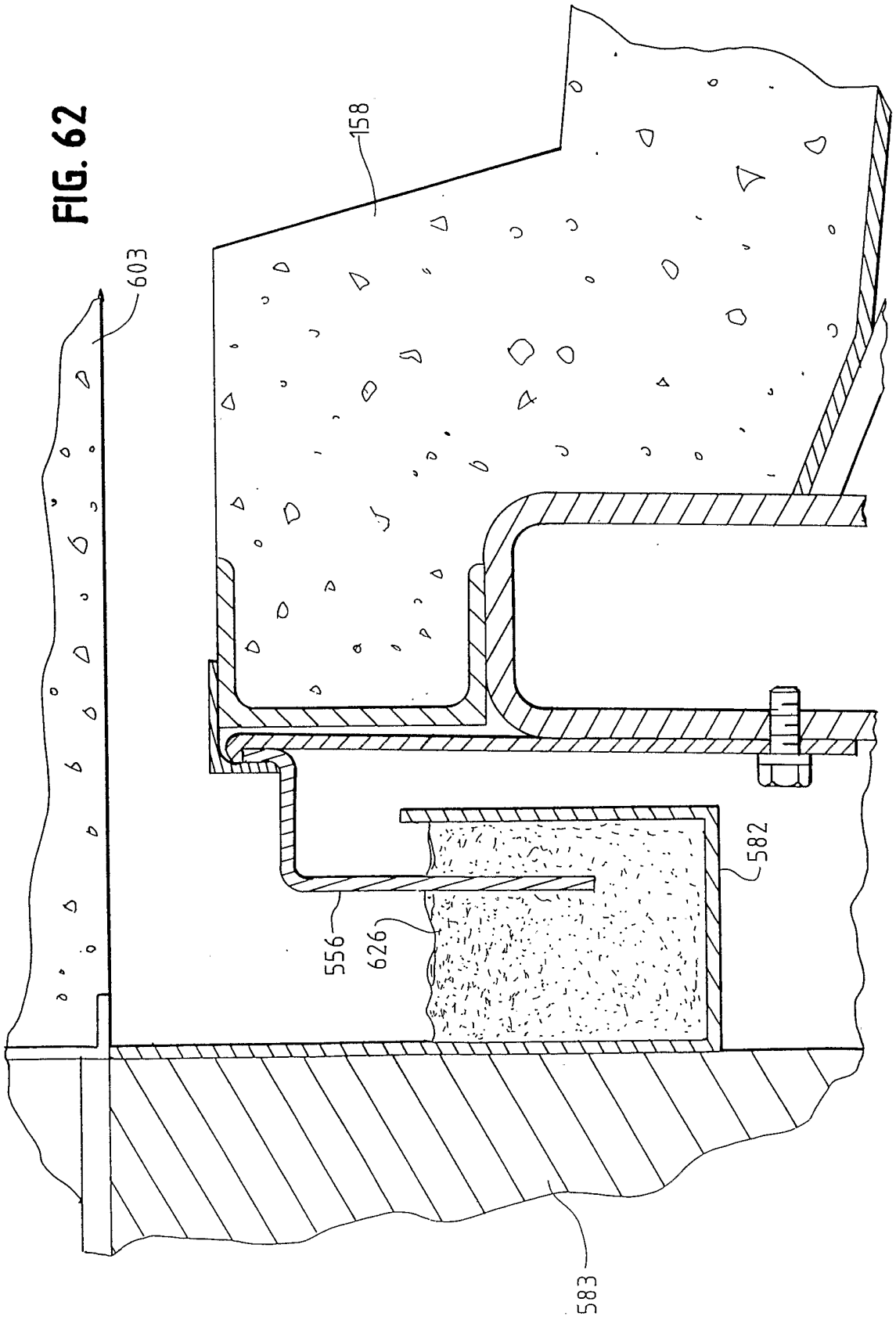

FIG. 63

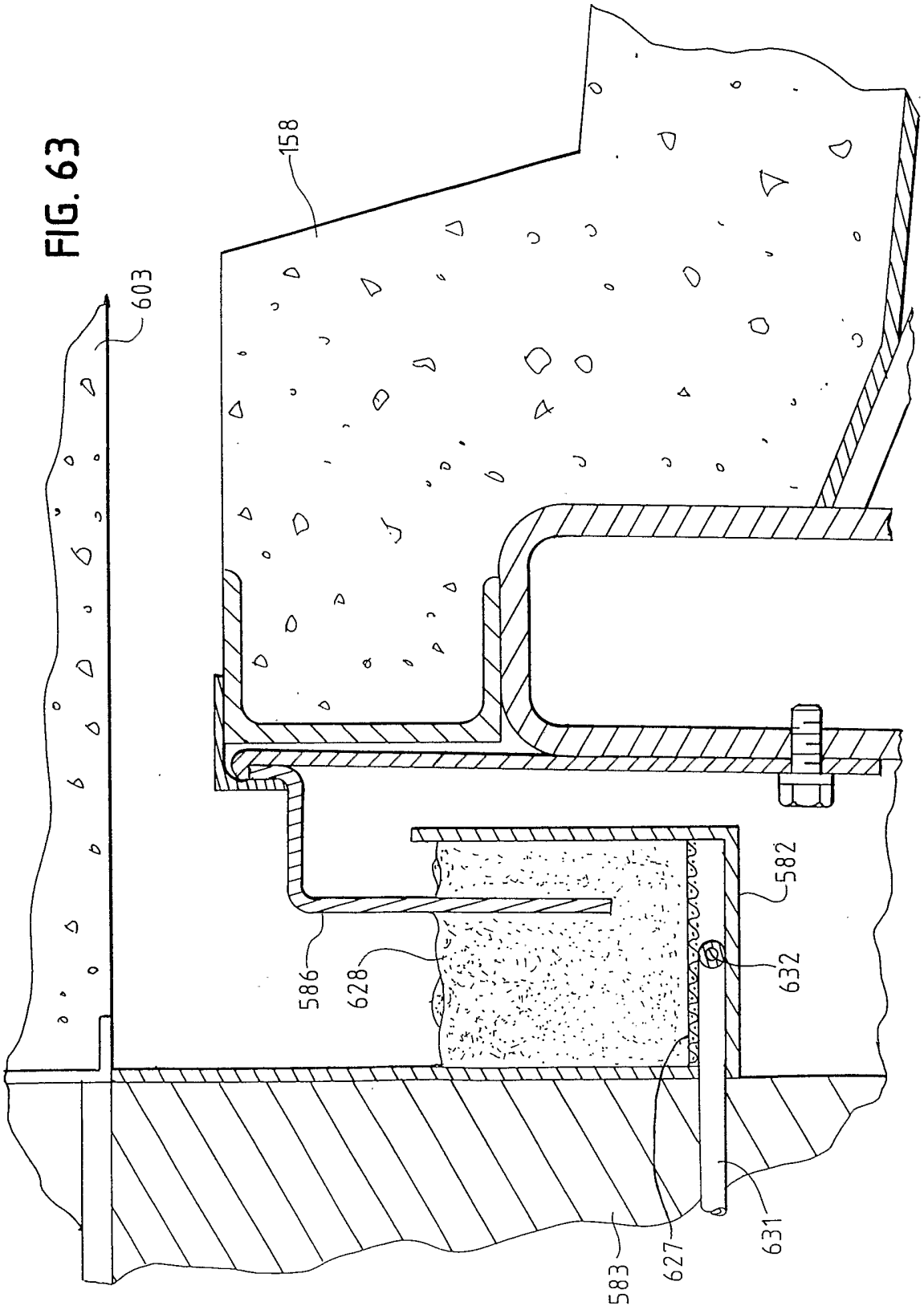

FIG. 64

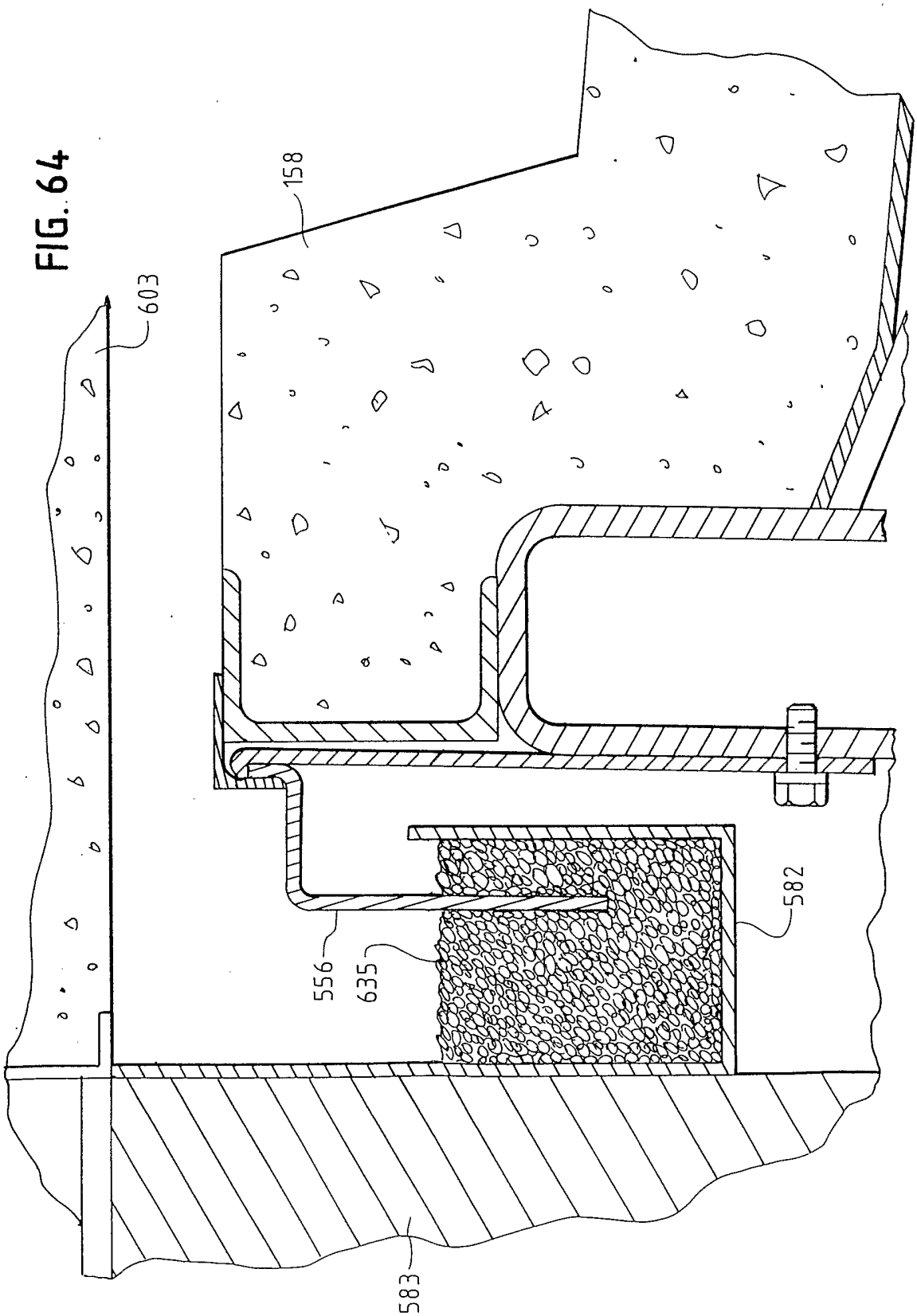

FIG. 65