Sept. 13, 1955 G. S. SMART 2,717,513

BASEMENT WITH DRAINAGE MEANS

Filed Aug. 1, 1952 2 Sheets-Sheet 1

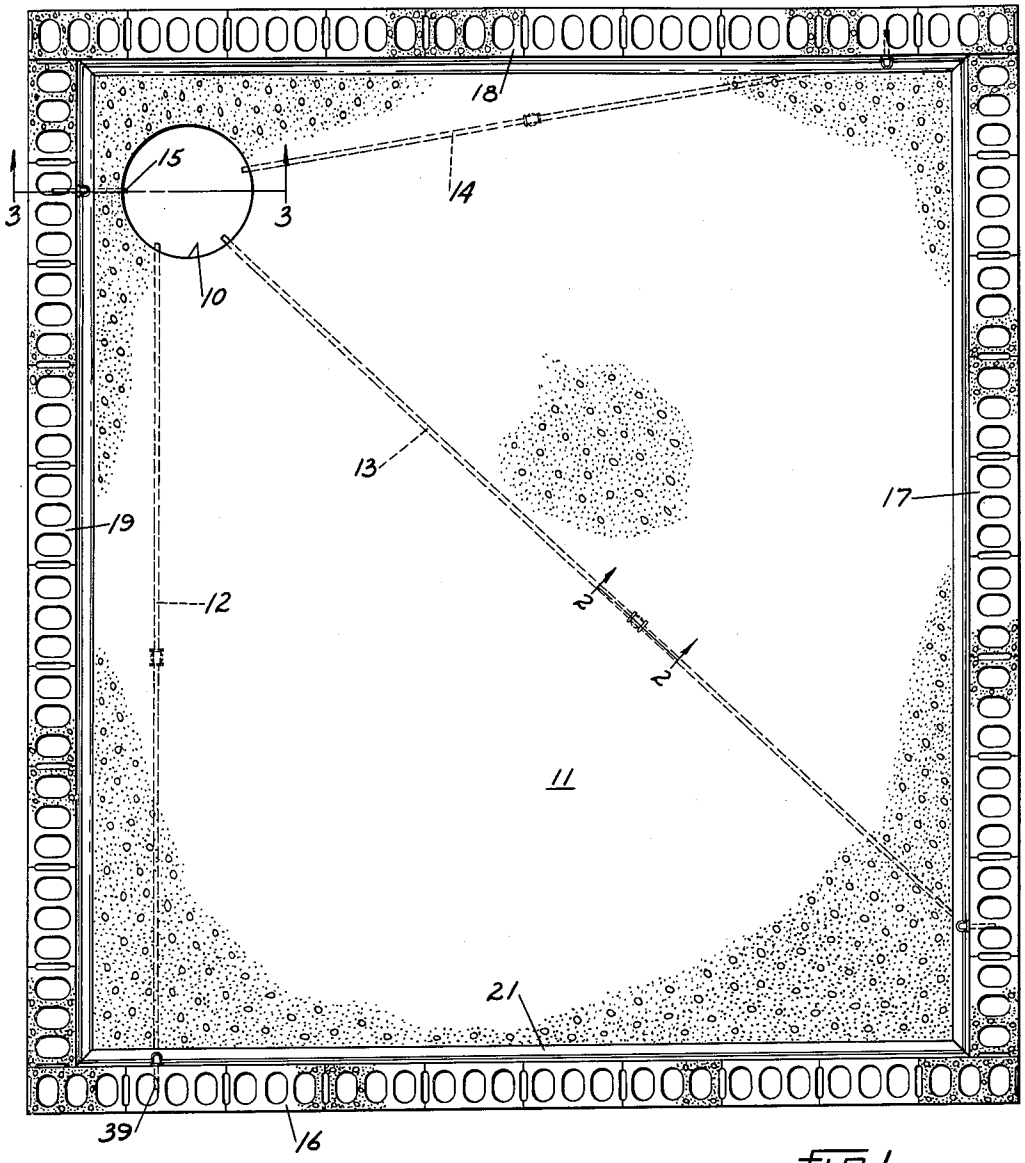


FIG. 1.

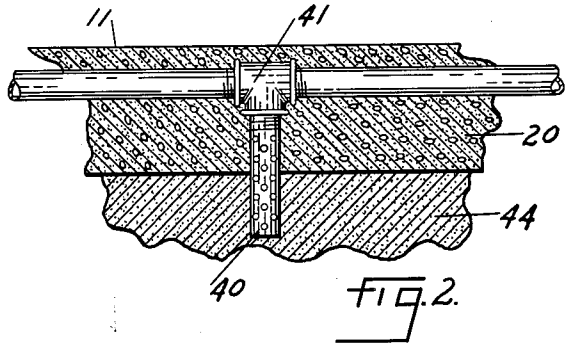


FIG. 2.

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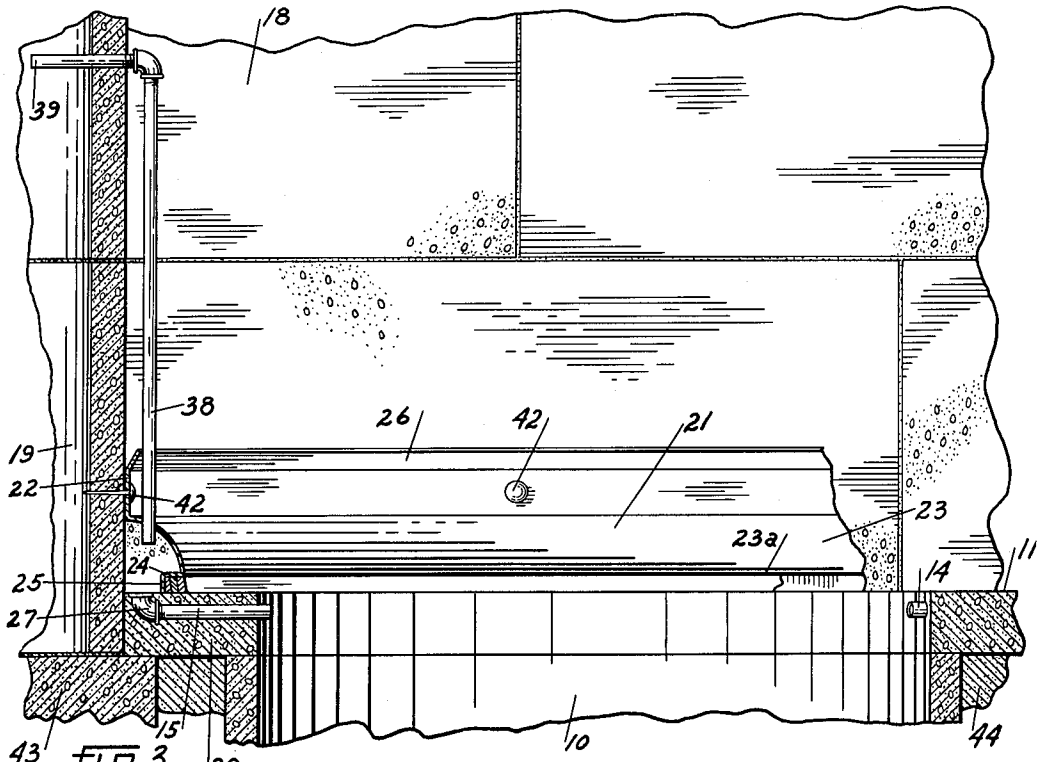


FIG. 3.

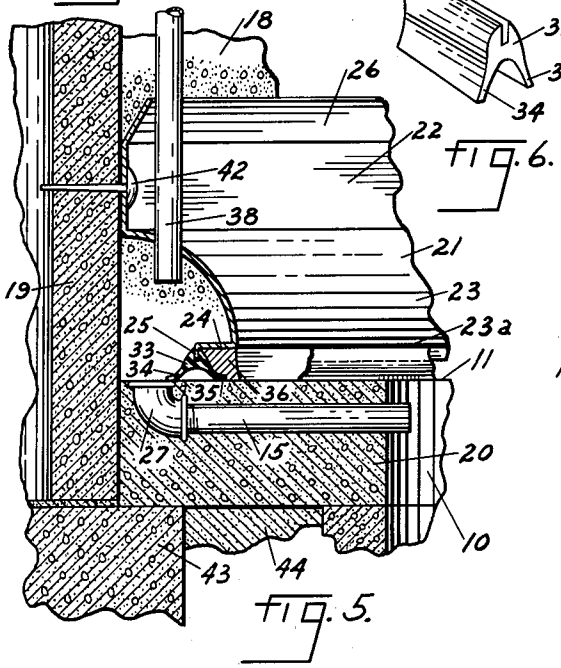


FIG. 5.

FIG. 6.

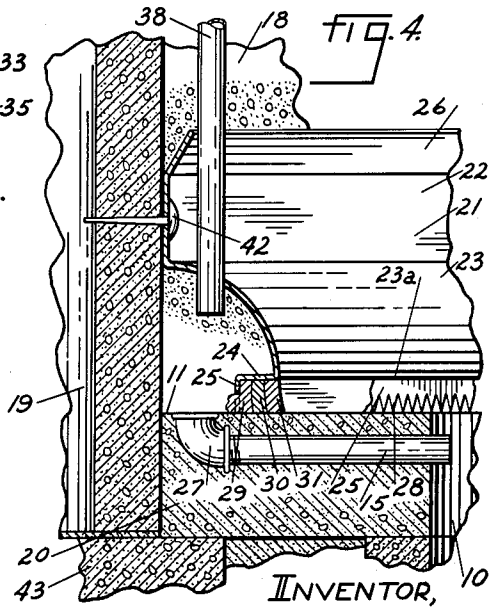


FIG. 4.

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2,717,513

BASEMENT WITH DRAINAGE MEANS

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Application August 1, 1952, Serial No. 302,267

4 Claims. (Cl. 72—10)

In many communities throughout the country the problem of surface as well as subsurface drainage becomes quite a problem in maintaining basements of buildings in a dry state. It is a primary purpose of this invention to provide structural means for preventing the building up of a hydrostatic pressure not only in and about the walls of the basement, but also across the floor area thereof. In some instances, the floor of the basement will even be below the provided drainage facilities in the community so that moisture or water has to be collected in a sump and pumped from the sump up to the level of the drainage facilities. Also in some communities, buildings are erected upon the sides of hills such that one side of the basement wall will be on the up side of the hill wherein that particular wall is subjected to a greater water pressure than would be the lower and more exposed side of the wall.

The primary object of this invention is to provide means for draining water away from the zones where pressures may build up to cause water to flow through the porous walls of the building structure, as well as to leak through about the abutments of concrete floors and the like with those side walls or with the abutments upon which the walls rest.

Regardless of how well the inside wall of a basement or of a floor also may be so-called "waterproofed" there will be in the majority of instances where there is any difficulty at all a sufficient hydrostatic pressure built up to break through the waterproofing inner surface and also to cause cracks to appear not only in the walls, but in the floors, even to the extent where part of the wall may even be bulged inwardly and the floor itself lifted whereby the water may pour through those cracks thus produced.

A further important object of the invention is to provide means for draining the water away from the pressurized zones in a manner which is not only easily installed, but is extremely effective, and is durable for substantially as long as the life of the building in which the invention is incorporated.

A further advantage of the invention is that it may be applied to a structure which has already been erected and is found to be subjected to these water pressures. The invention, of course, can be installed at the time of the building of the structure, but as indicated, the invention may be applied at any time after the completion of the construction.

A still further important advantage of the invention resides in the fact that the structural elements entering into the invention may be applied at a relatively low cost and without making any material changes in the structure itself.

The invention will be better understood and the advantages thereof become plainer by describing the one particular form of the invention as illustrated in the accompanying drawings, in which:

Fig. 1 is a plan view of a basement of a building to which the invention has been applied;

Fig. 2 is a vertical section of a detail on the line 2—2 in Fig. 1, on an enlarged scale;

Fig. 3 is a detail in vertical section on an enlarged scale on the line 3—3 in Fig. 1;

Fig. 4 is a detail in vertical section on a still further enlarged scale, the section being the same as that shown in Fig. 3;

Fig. 5 is a similar detail in vertical section showing a modified form of a seal; and

Fig. 6 is a view in perspective of a short length of a sealing element as shown in Fig. 5.

Normally a sump 10 is provided at any suitable location in respect to the area of the floor 11, herein shown as being at one corner thereof. The sump 10 is simply a vessel formed to open through the floor 11, and into which water may be drained or collected for removal therefrom, such as by a pump (not shown).

A plurality of drain pipes, herein shown as four in number and identified by the numerals 12, 13, 14 and 15 are carried from points respectively immediately adjacent the lower ends of the four side walls 16, 17, 18, and 19, as indicated in Fig. 1. These pipes 12–15 inclusive are in the present instance shown as being sunk within the concrete slab 20, the upper side of which constitutes the floor 11. Of course the pipes may be placed below that slab if they are to be installed at the time the slab is being poured. Otherwise, the pipes 12–15 are placed within the slab by chiseling out grooves and burying the pipes therein to cover them over in any suitable manner, such as by the material originally used in the slab.

A molding 21 is placed entirely around the lower end of the four walls in each instance, and at the junctions between those walls and the floor 11. The molding or conduit 21 affords a water-conducting space between its wall and the lower end of the side wall in each instance and the floor 11.

This conduit 21 is made out of any suitable material which will be substantially rigid and durable over a long period of time, the material being preferably metal, and possibly a plastic material. The material itself does not enter into the invention per se, the only requirement being that the molding retain its shape and form and not be accidentally displaced by normal usage within the basement.

The molding 21 as best shown in Figs. 3–5, has a vertical, planar length 22 from the lower edge portion of which the material is curved laterally and around downwardly in spaced relation from the plane of the portion 22, this curving portion being identified by the numeral 23. Then from the lowermost edge portion of the down curved section 23, the material continues in an integral manner by an inturned leg 24 of a length less than the spacing of the lower edge 23*a* of the section 23 from the plane of the portion 22. From the inner end of the leg 24, there is a foot 25 turned downwardly in a vertical plane. The upper edge portion of the planar section 22 has a lip 26 which is turned outwardly and upwardly on that side of the portion 22 from which the portion 23 extends.

The molding 21 is brought up against the wall 19, for example, to have the foot 25 pressed downwardly toward the floor 11, to set up through the curve portion 23 an elastic or yielding pressure, by nailing through the planar portion 22 with suitable securing elements, such as nails 42 into the wall 19 while the foot 25 is being pressed downwardly. The lip 26 is then outturned from the wall and serves as a gutter between it and the wall to collect any condensation which may form on the wall and run downwardly therealong. The water condensation caught between the lip 26 and the wall may seep through the wall, since it is porous in any event, and drain downwardly as will hereinafter be explained.

The spacing of the foot 25 from the wall 19 is made to be such that the pipe 15 has its end fitting 27, herein shown as an L, uncovered so that any water collecting

within the molding **21** may drain downwardly through the L **27** into the pipe **15**, and thence flow into the sump **10**.

The foot **25** is water sealed with the floor **11** in any suitable manner. Two such forms are shown in Figs. 4 and 5. In the form shown in Fig. 4, the foot **25** has its lower edge serrated to form the teeth **28**, the points of which compressibly bear and to some extent extend into the surface of the concrete floor **11**. Then a quick setting compound **29** is applied back under the leg **24** and against the foot **25** to effect an initial sealing with the floor **11**. This compound **29** is used particularly where the floor may already be wet with water, and in this case the compound is made out of a quick-setting cement mixture which will adhere to the floor **11** in spite of the moisture appearing thereon. Then that original or first placed seal **29** is backed up with a second seal **30** of any suitable compound such as the usual and well known calking compound to back up the quick hardening material **29**, this seal **30** being one which will provide for contraction thereof and yet maintain a watertight seal. Finally, a surface and finish seal such as an aluminum base putty may be employed to extend downwardly from the corner **23***a* to the floor **11** to provide a smooth continuation therebetween.

Thus in that particular form, the conduit **21** forms a closed water conducting medium between it and the floor **11**, and the wall **19**. That is, no water may escape from the molding **21** over the floor **11** unless the water in the wall or about the wall rises to a height above the molding.

Referring to that form of sealing the foot **25** to the floor **11** as shown in Fig. 5, in this instance the foot **25** is smooth-edged to fit within a groove or slot **32** formed in a length of a rubber-like molding **33**, the under side of which is bifurcated to have the two spaced apart flexible legs **34** and **35** which are carried compressibly down against the floor **11** to tend to spread apart when they are compressed against the floor **11** as indicated in Fig. 5, whereupon there is an effective seal made immediately between the foot **25** and the floor **11**, although the surface of the floor **11** may be wet at the time of the installation. To insure a permanence of sealing, the molding **33** is backed up by a non-setting waterproofing medium applied in the nature of putty, being designated by the numeral **36**. This seal **36** extends between the leg **24**, the side of the molding **33**, and the floor **11** to effect a finish from the corner **23***a* to the floor **11**.

The same relationship and sealing is carried around the molding which extends around the four walls as indicated in Fig. 1, and in all instances, the ends of the pipes **12**, **13** and **14** enter upwardly through the floor **11** into the space defined within the molding **21** above the floor **11** and to the side of the respective walls **16**, **17** and **18**.

In those instances where water may build up on the side walls to an appreciable height so as to set up the hydrostatic pressure tending to cause the water to penetrate through the side walls above the molding **21**, there is preferably employed a relief drainage system consisting of vertically disposed pipes **38** having side branches **39**, Fig. 3, entering into the cavities of the walls so that water building up within those cavities may be drained down through the pipe **38**, the lower end of which terminates within the molding **21** so that the water is drained into the conduits formed by the moldings and thus may drain out through the pipes **12**, **13**, **14**, and **15** to the sump **10**. It is assumed that in using the pipe **38**, the various walls will be made out of concrete blocks. Where the wall is poured in a solid concrete form, then the water itself will tend to be trapped against the outside of that wall, and by draining the water away from the lower end of the wall, that hydrostatic pressure may be reduced. This drainage is occasioned by placing the ends of the various pipes **12–15** immediately adjacent the lower ends of the respective walls, so that the water leaking around the footing **43** and up and around under the slab **20** and between the juncture of that slab **20** and the lower end of the wall will be entrapped within the molding **21** at all points along the walls. Thus the water will be drained away from that vital zone.

Furthermore, water tending to build up a pressure in the zone removed from the walls and under the slab **20** is drained away to prevent the building up of pressure thereunder by means of suitable nozzles **40**, Fig. 2, interconnecting with the respective pipes as the situation may warrant. In the form herein shown, the pipes **12**, **13** and **14** each is provided with a nozzle **40** which extends downwardly through the slab **20** and into the subgrade or gravel **44** which is usually provided under the slab **20**, and into which gravel **44** the water will accumulate. Such accumulated water can thus be drained off through the nozzle **40** and the interconnected pipes to the sump **10** without any danger of pressure being built up under the floor **11** tending to lift it.

While these nozzles **40** may assume any desired shape and construction, they are shown herein as simply short lengths of pipe perforated and interconnecting with the primary drainage pipes by means of a T fitting **41** in each instance.

By reason of the use of the four pipes, herein shown as going to each of the side walls, the water does not necessarily have to flow entirely around the conduit **21** from one end to the other to be conveyed to the sump **10**, but may be drained off at the various open ends of the pipes **12–15** all as above indicated. The condensation water above referred to as being caught by the lip **26** may be absorbed into the wall in each instance to eventually return to the space within the conduits **21**. The degree of absorption, of course, will depend upon the amount of water collecting behind the lips in each instance. Of course some of the water may seep downwardly between the wall and the planar portion **22** of the molding in each of the walls since the nails **42** will be spaced one from the other along those walls to leave intervals wherein the conduit may not be compressibly held against the wall. The primary purpose of the use of the nail **42** is not only to hold the conduit **21** in place, but also to insure that there is a downward pressure exerted at all times to effect a seal between the foot **25** and the floor **11**. At no time is it contemplated that the water will be permitted to build up to such a height that it will have its effectual level above the planar portion **22** in each instance.

Therefore it is to be seen that there is provided in the invention a very simple, effective, and quickly installed structure for the purpose intended, and while I have described the invention in the one particular form, it is not intended that the invention be limited to that precise form beyond the limitations which may be required by the following claims.

I claim:

1. The combination of a side wall, a floor with a junction between it and the wall; a molding bearing in spaced relation across said junction between said wall and said floor; means sealing a lower portion of the molding to said floor; and means conducting water from within said molding; said molding having an upturned wall bearing area, an outwardly and downturned portion extending from that area, a leg inturned from the lower end of the downturned portion, terminating in outwardly spaced relation from the vertical plane of said area, and a foot downturned from the inner end of said leg.

2. The combination of a side wall, a floor with a junction between it and the wall; a molding bearing in spaced relation across said junction between said wall and said floor; means sealing a lower portion of the molding to said floor; and means conducting water from within said molding; said molding having an upturned wall bearing area, an outwardly and downturned portion extending from that area, a leg inturned from the lower end of the downturned portion, terminating in outwardly spaced relation from the vertical plane of said area, and a foot downturned from the inner end of said leg; said foot serving

as a molding spacer from the floor, and molding to wall securing means passed through said area.

3. The combination of a side wall, a floor with a junction between it and the wall; a molding bearing in spaced relation across said junction between said wall and said floor; means sealing a lower portion of the molding to said floor; and means conducting water from within said molding; said molding having an upturned wall bearing area, an outwardly and downturned portion extending from that area, a leg inturned from the lower end of the downturned portion, terminating in outwardly spaced relation from the vertical plane of said area, and a foot downturned from the inner end of said leg; said foot serving as a molding spacer from the floor, and molding to wall securing means passed through said area; the space between said leg, said foot, and the floor defining a groove; and waterproof sealing means carried in said groove.

4. The combination of a side wall, a floor with a junction between it and the wall; a molding bearing in spaced relation across said juncture between said wall and said

floor; means sealing a lower portion of the molding to said floor; and means conducting water from within said molding; said molding having an upturned wall bearing area, an outwardly and downturned portion extending from that area, a leg inturned from the lower end of the downturned portion, terminating in outwardly spaced relation from the vertical plane of said area, and a foot downturned from the inner end of said leg; and an outturned water condensation catching lip along the upper edge of said area.

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