A weather-proof vent for use in building construction.

The invention relates to a vent pipe terminal which is intended to be used on the outlet end of a vent pipe which passes through the roof of a building. The terminal is in the form of an elbow comprising a tubular portion which extends through the roof, and a hollow box-like outlet portion extending laterally of the tubular portion, the outlet portion being intended to lie on the roof tiles, slates or other cladding. This provides a terminal of greatly improved aesthetics.

Additionally the terminal according to the invention is combined with a flexible weatherproofing apron extending all round the tubular portion. There may also be an apron support attached to the terminal for supporting the underside of the apron where the latter receives no support from the roof structure.
Modern building practice requires the provision of a ventilator for the soil drainage system of each property (house) rather than merely venting a soil drainage system pertaining to several properties. Indeed, because it is often considered necessary or advisable to provide a separate ventilator for each soil discharge pipe (i.e., one for each water closet) it is not uncommon to have two or more drainage ventilators for a single property. Ventilation is provided by ventilation pipes open at the top and it is a requirement of United Kingdom building regulations, that the open top end of such a vent pipe shall be at least 900 millimetres above the top of any adjacent window or other opening in the building. Consequently, vent pipes normally project above the eaves of the building.

Many vent pipes are still fitted on the outside of buildings, and in the United Kingdom, building regulations permit this on buildings up to 3 storeys high. However, in order to take the top of the vent pipe to the required height, an outside vent pipe usually has to incorporate bends to allow it to pass the guttering at the eaves of the roof. This is expensive, unsightly, and sometimes results in a poorly supported upper part of the vent pipe. Increasingly therefore, the tendency is to provide vent pipes which pass through the slates or tiles of the roof - and this is compulsory where the building is more than 3 storeys high.

Undoubtedly, a vent pipe passing through the roof
is better design than one carried around the guttering and eaves, but there are problems associated with the weather-proofing of a vent pipe which passes through the slates, tiles or other roof cladding.

A soil stack vent pipe which projects through a roof is provided with a weather-proofing lead "slate", which is intended to seal between the pipe and the roof. The lead "slate" has a hole formed in it to receive the pipe and a lead sleeve integral with or fixed to the lead "slate" projects upwardly from the hole, this sleeve being as close a fit as practicable around the outside of the vent pipe. In addition, good building practice requires the fitting of a plastics weather collar around the vent pipe immediately above the top end of the lead sleeve, though this is frequently omitted in practice. The apron of the lead "slate" should be fitted below the slate(s) or tile(s) that has been perforated to accommodate the upstanding sleeve of the lead "sleeve", so that at least the lower part of the apron is sandwiched between two slates or tiles. When so fitted, the apron takes over the weather-proofing function of the perforated slate(s) or tile(s).

A major problem with the lead "slate" arrangement is that the vent pipe sleeve must be vertical when the "slate" is fitted to a roof; but roof pitches vary greatly (from 15° to over 50°) so that it is necessary to manufacture a separate form of lead "slate" and vent pipe sleeve for each roof pitch, and therefore a builder or builders merchant has to stock a variety of lead "slates" which are quite expensive items. There are weather-proofing lead "slates" which have adjustable angle pipe sleeves, but these are very expensive, and
even then are only adapted to accommodate part of the possible range of roof pitches.

The construction in which the weather-proofing "slate" is fitted under a tile or slate of the roof is difficult to carry out properly, because it is very difficult for the slater to cut a circular hole for the vent pipe in a roofing slate or tile, and because, particularly in the case of single lap slates or tiles, there is no support for the underside of the lead "slate". In theory, it is possible to make a timber support for the lead "slate", but this is expensive, because it has to taper from bottom to top (to accommodate the angle between the underside of the lead slate or tile and the roof rafters). Strictly, any lead "slate" support should also be shaped on the top side to follow the contour of the underside of the roofing slate or tile if undulating tiles are used.

Because of the difficulties of fitting the lead "slate" under a roofing slate or tile, builders often adopt the expedient of fitting it on the top of the slates or tiles and beating it to the contours of the roof. At the best, this produces an unsightly detail, and it is a source of problems, firstly because water may be driven between the underside of the lead slate and the roof tiles or slates in windy conditions, and secondly because in forming the lead "slate" to the shape of the roof, it is difficult to avoid forming depressions in which ponds of water can collect. In any case, the lead "slate" method of sealing around the vent pipe includes an uninterrupted vertical joint between the pipe and the lead sleeve which can give rise to water leakage through the roof.
The present invention provides a vent pipe arrangement which is generally superior to the lead "slate" construction described above. Although reference has been made (and in specific description will hereinafter be made) to soil pipe vents, it must be understood that the invention is applicable to any kind of vent pipe which passes through the roof of a building. Thus for example, the invention is applicable to the ventilation of soil pipes, flues or rooms (such as internal bathrooms or toilets) and indeed it can be used as a ventilator, where there is no ventilation "pipe" as such excepting that provided by the terminal itself, i.e. if the terminal is fitted to a roof to provide a roof vent for the loft space under the roof.

According to a first aspect of the invention, a vent pipe terminal which is intended to extend through a roof of a building comprises a tubular portion which in use will extend through the slates, tiles or other cladding of the roof, and a hollow box-like outlet portion extending laterally with respect to the tubular portion, the inside of the tubular portion communicating with the inside of the outlet portion so that the terminal comprises an elbow arrangement, and the outlet portion having one or more outlet openings
from its interior. In use, the outlet portion lies substantially parallel with the top surface of the roof. This is a fundamental difference from known vent pipes, which almost without exception, have a vertical section immediately below the outlet and in the case of vent pipes which project through a roof, the projecting part is always intended to be vertical. By contrast, the elbow type vent pipe of this aspect of the invention is deliberately intended to provide an outlet portion which is parallel with the sloping roof. In practice, it is preferable to locate the part which lies parallel with the surface of the roof as close to the roof tiles or slates as possible, so that there is a minimum projection of the vent pipe above the roof. In some instances, the outlet portion may rest on the roof cladding, but in the majority of cases, it is intended that part of the outlet portion shall be embedded in the cladding.

Preferably the outlet opening or openings is or are shrouded to prevent rain or snow falling into the outlet portion. In the preferred construction, the outlet part comprises an open topped box and a lid, the lid overhanging the box and the outlet opening
or openings being formed in the box adjacent to its top edges and therefore close to the underside of the lid when the latter is in the box. It is further preferred that the lid has a downturned lip on its overhanging portions, spaced from the box wall when the lid is fitted to the box, the outlet opening or openings being protected by the overhanging part of the lid and its lip.

There may be a series of outlet openings in each side wall of the box along the top edge of that wall, there being lips on the side edges of the lid and spacing members on the box or the overhanging part of the lid to space the lips from their respective box walls.

The lid is preferably detachably secured to the box. It is further preferred that at least one drain hole is formed through the wall of the outlet portion at an end remote from the tubular portion.

Preferably the outlet portion is of substantially rectangular construction. It is further preferred that the part of the tubular portion which lies within the roof tiles, slates or other cladding is also of substantially rectangular cross-section. However it will probably be necessary to have
a change of cross-section from rectangular to circular or oval below the part which lies within the tiles, slates or other cladding to facilitate connection of the vent pipe terminal to a conventional circular cross-section pipe below the roof.

It will be appreciated, that the part of the vent pipe terminal which projects above the roof is very small indeed, and since it lies closely adjacent to and may in fact be partly embedded within the slates or tiles, it is hardly visible from the ground adjacent to the buildings. Hence, this aspect of the invention by itself, provides a vast improvement in the aesthetics of the vent pipe arrangement.

In a preferred arrangement, a weather-proofing apron is sealed on to the tubular portion of the vent pipe terminal and extends outwardly from all positions around that part of the vent pipe. Thus, the outlet portion of the vent pipe terminal which includes the actual outlet opening(s) lies parallel with the apron and therefore the assembly of vent pipe and apron can be used with a roof of any pitch without bending the apron. This is important, because it is preferable to avoid having to bend the apron about axes running along the length of the roof, as bends in that direction can form water channels.

Preferably the weather-proofing apron is flexible. It is preferably made of rubber, vulcanised rubber, synthetic rubber (e.g. nitrile rubber) or plastics material having physical properties similar to those of rubber, for example ethylene-polythene-dienne-molymer (E.P.D.M.) The vent pipe terminal and the weather-proofing apron may be made integral with each other
(in which case they must be made of the same or similar materials) or they may be bonded, cemented or welded together, or a watertight mechanical seal may be formed between them. As an example of a watertight seal, the apron may have a socket in which the terminal is received, a worm operated clip (jubilee clip) being provided to tighten the socket on to the pipe.

The flexible nature of the apron ensures that it follows the contours of the roof tiles or slates when it is either supported against the undersides of the tiles or slates by a specially provided apron support or is sandwiched between two course of tiles or slates. It has been found that an apron made of E.P.D.M. of approximately 3 or 4 millimetres thickness gives an adequate weather-proofing effect, whilst being flexible enough to allow it to accommodate to a variety of shapes of slates or tiles.

The vent pipe terminal may also include a generally planar self-sustaining apron support adapted to be readily secured to the terminal itself. Preferably the apron support has a pair of fingers which are received in sockets formed in the terminal or a part fastened to the terminal. The sockets may comprise grooves formed in the apron in the region of the junction between the tubular portion and the outlet portion, the grooves being open at one end to allow the fingers to slide into the grooves. If the grooves are formed in the terminal itself it is further preferred that the apron also fits into the top of each of the grooves, so that the parts of the apron in the grooves are compressed when the fingers are inserted to assist in retaining the apron support on the terminal itself.

Preferably the apron support is deformable, but self-sustaining (i.e. not flexible) so that on the one
hand, it can be bent to any formation required to enable it to follow the contours of a roof tile, but on the other hand, it will retain that formation.

Preferably, the apron support is made of wire mesh. Since the apron support itself can be readily secured to the roof battens, for example by nails, this provides a means of holding the vent pipe terminal in the correct location on the roof. In the preferred arrangement, the apron support comprises a series of substantially parallel wires extending in the direction of the roof rafters and bridged by two or more wires extending in the direction of the slate battens.

According to a second aspect of the invention, a vent which is intended to extend through the roof of a building comprises a vent pipe and a weather-proofing apron sealed to the outside of the vent pipe and extending outwardly from all positions around the vent pipe, the apron having a flexible nature such that it is not self-sustaining.

According to a third aspect of the invention, a vent pipe which is intended to extend through the roof of a building is combined with an apron support extending from the pipe to an extent such that it can provide an effective support for a weather-proofing apron located underneath a tile or slate of the roof in a region, where because of the slate or tile arrangement, the apron would otherwise be unsupported on the underside. In the case of a single lap type roof construction, there is of necessity quite a large area under the slate or tile through which the vent pipe passes, where the slates or tiles offer no support to a weather-proofing apron.
For such a construction, the apron support should be large enough to cover at least the major part of that area. (It is preferable to fit an additional batten in the "unsupported" area to provide anchorage for the apron support itself, so that it is not necessary to extend the apron support over one of the ordinary roof battens). In the case of double-lap tiles or slates, there is much greater support for the weather-proofing apron from the tiles or slates themselves. Even then however, because it is exceedingly difficult to cut a circular hole in the slates or tiles, for the vent pipe, there will usually be an open area between two slates or tiles, and it is this area in which the apron support must be effective, especially if a flexible apron is used.

Preferably the apron support is deformable but self-sustaining (i.e. not flexible), so that on the one hand, it can be bent to any formation required to enable it to follow the contours of a roof tile, but on the other hand, it will retain that formation.

It should be clearly understood, that the apron support referred to in the third aspect of the invention could also be used with ordinary lead aprons or slates.

Although the three aspects of the invention set out above are directed to structural elements, it is to be understood that the invention also includes within its scope structural assemblies including such elements, and methods of building construction which employ such elements, and which result in such structural assemblies.

The invention will be better understood from the
following description of certain specific embodiments which are given here by way of examples only, and with reference to the accompanying drawings, in which:-

Figure 1 is a part cross-sectional view through a part of a building having a pitch roof, showing a typical vent pipe arrangement, as currently employed, in which the vent pipe is located entirely on the outside of the building.

Figure 2 is a section through part of a pitch roof of a building, showing a soil stack vent pipe passing through the roof, the construction being in accordance with recommended practice,

Figure 3 is a perspective view of a lead weather-proofing "slate" used in the construction shown in Figure 2,

Figure 4 is a side view partly in section of a soil stack terminal and weather-proofing apron in accordance with the invention,

Figure 5 is an end view of the soil stack terminal in the direction of the arrow V in Figure 4, showing the method of securing an apron support on the terminal,

Figure 6 is an underneath view of the soil stack terminal looking in the direction of arrow VI-VI in Figure 4,

Figure 7 is a perspective view of a first apron support,

Figure 8 is a perspective view of an alternative apron support,

Figure 9 is a vertical section through a soil vent pipe adapter,

Figures 10 to 14, show various stages in the fitting of a soil stack terminal and weather-proofing
apron to a roof having single lap interlocking tiles,

Figures 15 to 19, show various stages in the
fitting of a soil stack terminal and weather-proofing
apron to a roof having double lap slates,

Figures 20 to 23 show various stages in the
fitting of a soil stack terminal and weatherproofing
apron to a roof having single lap interlocking profiled
tiles,

Figure 24 is a section through a detail of a
building in which the soil vent pipe is outside and
closely adjacent to the wall, showing a method of using
the invention,

Figure 25 is a view similar to Figure 24, but
showing a detail where a soil vent pipe is located
inside a building adjacent to a wall,

Figure 26 is a view similar to Figure 24, but
showing a detail where a soil vent pipe is located
outside and adjacent to the wall but the terminal is
positioned some distance from the vent pipe, and

Figure 27 is a section through a detail of a
building where a soil vent pipe is located inside the
building and well away from an outside wall, showing a
method of using the invention.

Figure 1 shows an outer wall 10 of a building
having a pitched roof 12. A water closet 14 is shown on
the inside of the wall 10, and the soil pipe 16 from
the water closet leads through the wall 10 of the
building, into a vertical soil pipe stack 18 on the
outside of the wall 10. As has previously been
mentioned, this is a very common arrangement,
particularly with older buildings, or modifications to
existing buildings, for example where a bathroom is
fitted for the first time.

It is a requirement that the soil pipe must be vented, and as illustrated in Figure 1, this is usually effected by providing an upward extension of the soil pipe, which forms a vent pipe 22, with an open end 24 protected by a wire mesh cage 26.

Figure 1 also illustrates the opening light 20 of a bathroom window, and current building regulations in the United Kingdom require that if the vent pipe 22 is within 3 metres horizontal distance from the opening light 20 (and of course this is almost inevitably the case) then the open top end of the vent pipe must be at least 900 millimetres above the top of the opening light 20. In a construction such as that illustrated in Figure 1, this necessitates taking the open top end of the vent pipe above the eave 26 of the roof 12.

In order to circumvent the gutter 28 and soffit 30, part of the vent pipe 22 has to be offset by the use of offset bends 32 and 34, and a bracket 36 has to be provided to support the offset part of the vent pipe. There should also be a tie 38 between the upper part of the vent pipe and one of the roof timbers, although in practice, such a tie is rarely fitted. It will be appreciated, that the construction adopted to circumvent the gutter and soffit is relatively complicated and expensive, and in any case, results in a rather unsightly detail. Indeed, in some instances, where an outside vent pipe is employed, much more complicated arrangements are adopted, such as resting part of the vent pipe on the roof itself, in order to carry the upper end to an elevated position.

As previously mentioned, because of the
constructional problems and the poor aesthetics of the outside vent pipe arrangement, increasing use is being made of an internal vent pipe, such as that shown in Figure 2. One of the rafters of a pitch roof is shown at 40, and a vertical soil stack vent pipe 42 inside the building, is taken vertically through the roof, so that its open top end 44 is at the required minimum height above any openings. Although such a construction avoids the complications of offsets as illustrated in Figure 1, vertically projecting vent pipes generally detract from the appearance of a building, but have to be accepted, because there is no effective alternative, which can be achieved at a reasonable cost.

It is of course essential to provide a weather-proofing joint between the roof of the building and the vent pipe 42, where that pipe passes through the roof, and for this reason, a weather-proofing lead "slate" 46 (see also Figure 3) is employed. The lead "slate" is essentially a rectangular sheet of lead, usually somewhat larger than a single slate or tile of the roof, and provided with an upstanding lead sleeve 48 which is intended to be a close fit around the outside of the vent pipe 42. The sleeve 48 is soldered to the main portion of the lead "slate" 46.

The main part of the lead "slate" 46 is trapped between an underlying tile or slate 50, and a superimposed tile or slate 52, and the upper part of the "slate" 46 is nailed to the batten 54 on which the superimposed tile 52 is hooked. A problem with the lead "slate" is that the sleeve 48 is at a fixed angle relatively to the main portion 46 of the "slate" and this angle is determined by the pitch of the roof.
Admittedly, it is possible to bend the main portion of the "slate" 46 to a limited extent, to accommodate slight variation in the pitch of the roof - although such bending can introduce problems including the formation of water collection depressions. However, since roof pitch angles vary from 15° to over 50°, it is necessary for the builder or builders merchant to stock a series of sizes of lead "slates", and this is undesirable, since the lead "slates" are quite expensive in themselves.

Another problem which arises with the construction illustrated in Figure 2 (which is the recommended construction) is that it is practically impossible to cut a circular hole in the superimposed tile or slate 52. The best that can be done as a rule, is to make a rough hole in the tile or slate, and of course - since this is visible in the completed building, the result can detract significantly from the appearance of the building. Yet another problem is that of supporting the lead "slate" on the underside. In Figure 2, there is illustrated a single lap type of roof construction, and with this construction, it will be observed that there is no tile or slate underneath the major part of the area covered by the lead "slate" 46. Figure 2 illustrates the provision of a support 56, which is made in timber, and which is secured to the rafters 40 in order to fill the area in which the lead "slate" would otherwise be unsupported. The timber support 56 has to taper from bottom to top, as clearly shown in Figure 2, in order to accommodate the angle between the superimposed tile or slate 52, and the rafter 40. In addition, if undulating tiles are used (and nowadays, roofing tiles are provided in a wide variety of shapes) then the top surface of the support 56
should be shaped to the contours of the underside of the tile. Obviously therefore, the construction of a well fitting support 56 is a highly skilled and time-consuming operation, and it is perhaps hardly surprising, that in practice such properly constructed timber supports are rarely used.

Another problem with the construction shown in Figure 2, is that there is an unbroken vertical joint between the vent pipe 42, and the sleeve 48. Any such joint is liable to permit water leakage, but this is particularly the case, where the vent pipe is formed of smooth plastics material, whereas the sleeve 48 is formed of lead, so that it is very difficult to obtain a close fit of the sleeve 48 around the pipe 42 at all points. With a view to avoiding water leakage through this joint, a plastics weather collar 58 should be fitted to the outside of the pipe 42, and pressed down over the top end of the sleeve 48. Even then, there can be no guarantee that in windy conditions, water will not seep through the joint between the weather collar 58 and the top end of the sleeve 48. Another problem is that the weather collar 58 is frequently omitted or incorrectly fixed because the correct fixing requires the collar to be fixed and weathered to the vent pipe by using an adhesive and this is not always readily available when a man is working on top of a roof.

With all these problems associated with the recommended construction illustrated in Figure 2, it is hardly surprising that in practice, this construction is not usually adopted. Instead, the main part 46 of the lead "slate" is simply laid on top of one of the tiles or slates of the roof, and pressed or beaten to the shape of
that tile or slate. This at least covers any unsightly hole formed through the tile or slate, and avoids the necessity for the construction of a special support such as that shown at 56, but on the other hand, it does not provide as effective a weather-proofing as the recommended construction, and it certainly detracts considerably from the appearance of the roof.

Figures 4 to 9 illustrate a vent pipe terminal and apron combination, provided by the present invention, which as will be hereinafter described, is intended to meet most of the problems associated with the passing of a vent pipe through the roof of a building, and in particular, the weather-proofing and aesthetic problems. The vent pipe terminal 60 is made of plastics material, such as P.V.C. as commonly used for example in the manufacture of guttering and fallpipes for use on buildings. It is to be understood however, that the vent pipe could be made in any material which will withstand weather conditions. Plastics material has been selected, because it is relatively easy to shape, and because it does not corrode. As is apparent from Figures 4 to 9, the vent pipe 60 is essentially "L" shaped or it could be said to take the form of an elbow, having a straight box cross-section outlet part 62 and a shorter tubular part 68 projecting at right angles from one end of the outlet part 62.

The outlet part 62 of the terminal takes the form an open topped hollow box 64 tapering downwardly from a relatively deep top end 66 to a short front end 69. In a typical example, the open topped box 66 may be approximately 270 millimetres in length. All four upstanding walls of the box section 64 are solid
imperforate walls, but at the bottom end 69, there are drainage holes 70 formed in the bottom corners of the bottom end wall, to allow moisture to drain from the box 64.

The box 64 also has a solid bottom section 72, but a comparatively large rectangular hole 74 is formed in the bottom of the box 64 adjacent to the top end of the box 64.

A series of spacing teeth 76 projects from each side wall of the box 64 near to the top edges of those side walls. A lid 80 formed of the same material as the box 64 is provided, and this lid is intended to fit over the open top of the box 64. The lid has a downturned lip 82 all round its periphery, and a series of internally projecting teeth is formed on the inside of the longitudinal sections of the lip 82, these teeth being so located, that each of them rests on a corresponding one of the teeth 76 on the box 64. Moreover, the inside faces of the lip 82 engage on the outer ends of the teeth 76, to locate the lid laterally with respect to the box 64, and whilst the top end portion of the lip 82 rests against the top end wall of the box 64, the bottom end portion of the lip 82 engages on a single location tooth 86 extending from the bottom end wall of the box 64. The lid 80 is secured on the box 64 by means of a setscrew 88 which engages in a screw-threaded hole in an upstanding spigot 91 formed in the box 64.

When the lid 80 is located and secured on the box 64, a series of outlet openings are provided from the interior of the outlet portion 62, each of these outlet openings being formed between the internal
teeth formed in the lid, and terminating in downwardly facing openings 90 between the teeth 76 projecting from the side walls of the box 64, and similar openings 92 on each side of the single end tooth 86 at the bottom end of the outlet portion.

It will be appreciated, that in total, there is an outlet opening of considerable cross-sectional area around the sides and bottom end of the outlet portion 62. However, a significant feature of this outlet opening is that it is shrouded by the lid, and opens in a downward direction. Hence, the outlet is protected from the elements, particularly rain and snow, and in this respect, it is superior to the known vertical stack type of venting terminal.

The lower part of the tubular portion 68 is a plain cylinder, of approximately the same bore as the soil pipe which is to be vented. There is a specially shaped junction portion 94, which is of generally rectangular shape where it joins the base of the open topped box 64 adjacent to the top end of that box but this section 94 also blends into the cylindrical lower part of the tubular portion 68. The rectangular opening 74 in the bottom of the box 64 opens into the junction portion 94, and hence provides a communication between the bore of the tubular portion 68 and the inside of the box-like outlet portion 62. Thus, the entire terminal 60 can be considered to be an elbow having an inlet at the bottom end of the tubular portion 68, and a shrouded outlet around three sides of the rectangular box outlet portion 62. Since there are no obstructions within the terminal, there is thus provision for a free flow of air into and out of any pipe connected to the
tubular portion 68.

A weather-proofing apron 100 (see also Figure 10) is secured to the vent pipe terminal 60. In this particular construction, the weather-proofing apron 100, is made of ethylene-polythene-diene-molymer (E.P.D.M) and is of approximately 3 millimetres thickness. This means that the apron is quite flexible when unsupported, and has approximately the same ability to drape as a rubber mat. Whilst in this particular arrangement, the apron is made of E.P.D.M., it is to be understood that it could be made of rubber, synthetic rubber or plastics material. The essential features of the apron are that it must be water-impermeable and moisture-resistant, and that it should have at least some degree of flexibility. Near to the centre of the apron, it is formed with a rectangular hole and a depending lip 102 surrounding the hole. As shown in Figure 5, the lip 102 is a tight fit around the rectangular upper part of the outlet portion 68, and in fact the apron 100 can only be fitted on to the terminal 60, by distending the lip 102, to pass it over the lower cylindrical part of the tubular portion 68. Once the lip 102 rests on the rectangular part of the tubular portion, it grips tightly on that part. However, it is also preferred to apply adhesive to the interior of the lip 102, so that it seals tightly to the plastics terminal 60 when in position as shown in Figure 5.

The apron 100 is also provided with upstanding spigots each of which is a snap fit into one of a pair of holes 106 formed in the base of the box section 64 to assist in securing the bottom part of the apron to the bottom end of the box 64. Moreover, where the apron
passes under the base of the box 64, it is preferably secured to that base by adhesive. In other words, steps are taken to ensure that the apron is not only securely attached to the box section 64, but also that it makes a water-tight seal with that section.

The top face of the apron 100 is formed with a series of shallow ribs 106, which extend parallel with the side walls of the terminal 60, when the apron is in position on the terminal. Hence, water which might arrive on the top face of the apron will be guided by the ribs 106, downwardly, i.e. from top towards the bottom end of the apron. It will be noted from Figure 10, that the bottom edge of the apron coincides with the bottom end of the box 64.

The bottom part of the apron 100 is formed on its underside, with a series of ribs 108 (see Figure 4) which are more substantial than the ribs 106, and which extend at right angles to the ribs 106, that is to say they extend across the width of the apron. The purpose of the ribs 108, is to provide moisture traps against moisture being driven by a wind upwardly across the undersurface of the apron 100.

Thus far, there has been described a combination comprising only the vent pipe terminal 60, which is of a totally different shape to conventional vent pipe terminals, and the flexible apron 100, which seals on to the vent pipe terminal, but extends from all sides of the position where it is attached to the terminal, and which is also sealingly attached to the terminal. Such a combination is in itself believed to be quite new.

Turning now Figures 7 and 8, there are illustrated alternative kinds of apron support, which are intended to
be used with the terminal and apron combination so far described. In fact, a kit of parts which will be supplied for carrying out the invention, will normally contain one of each of the terminals shown in Figures 7 and 8, so that the fitter can make a selection between these alternatives, according to the arrangement of the roof cladding.

In Figure 7 there is illustrated an apron support 120, which comprises a wire mesh grid, formed from a series of longitudinally extending straight stainless steel wire rods 112 bridged by laterally extending rods 114, 116 and 118, the connections between the wires where they cross each other, being effected by welded or soldered joints. In the particular example which is illustrated in Figure 7, the wire mesh grid is rectangular, and is approximately 450 millimetres long and 200 millimetres wide.

It will be noted that the bottom laterally extending rod 118 is divided, and only six longitudinally extending rods 112 are joined to each of the parts of the rod 118. At the centre of the apron support, there is a short longitudinally extending rod 121, which only extends from the top laterally extending rod 114 to the centre laterally extending rod 116. In addition, each of the longitudinally extending rods 122 and 124 on each side of the centre rod 121, is supplemented by an additional longitudinally extending rod which is welded or soldered to the respective rod 122 and 124, to provide two doubled rods. These doubled rods extend almost to the bottom edge of the apron support, but their bottom extremities are in the gap between the two parts of the laterally extending rod 118. This provides
two fingers each of which comprises the part of one of the rods 122 and 124 below the centre laterally extending rod 116 and its welded-on reinforcing rod. The purpose of these two fingers will appear hereinafter.

It will also be noted from Figure 7, that at their bottom ends, each of the longitudinally extending rods 112 is bent over at 128 to provide a short downwardly extending projection. The apron support 110 is completed by a ring handle 130 which is pivoted on the laterally extending rod 116 between the two fingers.

Reverting now to Figure 5, the downwardly extending lip 102 on the apron 100 is formed on the outside of its longitudinally extending parts with triangular ribs 132. The top edges of the ribs 132 are spaced from the underside of the apron 100, to form a groove 134, and this groove is slightly shallower than the thickness of the longitudinally extending rods of the apron support just described. Moreover, the lateral spacing between the roots of the grooves 134 is approximately equal to the lateral spacing between the reinforced fingers formed by the rods 122 and 124 on the apron support.

When it is desired to assemble the apron support on the terminal 60, the fingers on the support are slid into the grooves 134 formed on the apron and this is permitted because the top end of each groove is open. The bottom end of each groove 134 is closed, and this provides a stop for the respective finger, to locate the apron support.

The position which is occupied by the apron support 120 when it is in position, is best illustrated in Figures 10 and 20. In this position, because of its
rigid nature, the support provides a planar support structure for the top part of the apron 100 above the outlet portion 68 of the vent pipe terminal 60. The top marginal portion of the apron 100 projects above the top edge of the apron support, and of course this portion remains able to flex downwardly. However, as will appear from the following description of the use of the invention, the support 120 can be used to hold the upper portion of the apron 100 against the underside of overlaid tiles or slates in a region where otherwise the apron would be unsupported on the underside.

Turning now to Figure 8, there is illustrated an apron support 150, which is constructed in similar fashion to the apron support 120, excepting that it is much narrower, and comprises only three longitudinally extending rods 152, 154 and 156 (of which the outer rods are duplicated to provide reinforcing) and three laterally extending rods 158, 160 and 162. There is also a ring hook 164 pivoted on the bottom laterally extending rod 162. Hence, this apron support has two downwardly projecting fingers on its outer edges, and these are engageable in the grooves 134 on the apron in the same manner as that described with reference to Figure 7. When the apron support 150 is attached to the apron, it occupies the position illustrated in Figure 15. Again, it provides a rigid support for the underside of part of the top portion of the apron, but this rigid support is relatively narrow, and the support 150 is only used in situations in which in any case, most of the underside of the apron 100 will be supported by slates or tiles.

The total combination of items so far described,
includes the vent pipe terminal 60, the flexible apron 100, and one of the two apron supports 120 and 150. These are combined as shown in either Figure 10 or Figure 15 depending upon which of the apron supports is selected.

The kit of parts needed to provide the vent pipe terminal arrangement also includes a soil pipe adapter 170 illustrated in Figure 9. This is moulded in the same polyvinylchloride material as that used for the vent pipe terminal 60. Essentially, it comprises an upper tubular section 172 and a lower tubular section 174 joined by a flange 176. The upper tubular section 172 is of the same internal and external dimensions as the cylindrical part of the tubular portion 68 of the terminal. The lower tubular portion 174 is bored so that it is a push fit on a soil pipe stack of the kind which has to be vented. The underside of the flange 176 provides an end location for the soil pipe stack, when the adapter 170 is pressed on to it.

The kit of parts is completed by a flexible pipe 180 (see for example Figure 24) which is a relatively tight fit on the outside of the cylindrical part of the tubular portion 68 of the terminal 60 at one end, and on the upper tubular portion 172 of the adapter 170 at the other end. It is preferred to secure the pipe 180 to these two tubular portions by worm operated clips (jubilee clips). The flexible pipe 180 is cut to the required length on site as will be hereinafter explained.

In Figures 10 to 14, there are illustrated the constructional steps necessary in the fitting of a vent pipe terminal 60 as shown in Figures 4 to 9, in a roof made of single lap concrete slates or tiles 200, 202, 204,
206, 208 and 210. Each of the slates or tiles has its lower end resting on the upper end of a slate or tile in a preceding row of slates or tiles, as can be clearly seen in Figure 10. Each of the slates or tiles has a depending lip 212 across its upper edge, and this lip is hooked on to a batten 214 secured to the rafters (not shown). It will be noted that each of the slates or tiles in one row lies on top of two slates or tiles in a preceding row, the arrangement being such, that half of the lower part of each slate or tile rests on one of the slates or tiles of the preceding row.

This arrangement of the slates or tiles is in itself quite conventional, but it is to be noted for present purposes, that it results in quite a large gap between the top edge of a slate or tile and the batten supporting the superimposed slate or tile. That is the gap shown for example between the bottom edge of the batten 214 and the top edge of a tile such as 205 suspended from a lower batten. It will be recalled, that one reason why it is difficult to employ lead "slates" for weather-proofing purposes in the recommended manner, is because of this relatively large open area in which a lead "slate" would be unsupported, if it were located below the slates or tiles 200, 202 and 204.

When it has been decided where to locate the vent pipe terminal 60, a rectangular slot 218 is formed through the roofing felt 220, and another rectangular slot 222 is formed in the lower part of the slate 208, which will constitute the superimposed slate appertaining to the fitting of the terminal 60. This slot 222 is just wide enough to accommodate the outlet part 62 of the terminal 60. It will be appreciated, that
it is relatively easy to cut a rectangular slot such as that shown at 222 in a slate or tile, because in fact, straight cuts are frequently made on slates during building construction. The location of the slot 222 will be determined so that the bottom end of the outlet portion 62 of the terminal 60 is at a sufficient height above any window or like opening in the building, to comply with regulations. A feature of the present invention, is that it is not necessary to attempt to achieve vertical alignment between the slot 222, and the position at which the soil pipe will be located in the bathroom. This in itself facilitates the construction of the vent pipe detail.

During the construction of the roof, the row of slates or tiles including the slates 200, 202 and 204 is fitted and secured in the conventional manner as illustrated in Figure 10. A short additional batten 230 is nailed to the rafters just below the batten 215 which is required to support the superimposed row of slates which include the slates 206, 208 and 210. At that stage, the apron support 120 is fitted to the combined terminal 60 and apron 100 by sliding the fingers of the apron support into the grooves 134 as previously described, until the apron support is in the position illustrated in Figure 10. The upper portion of the apron 100 above the top end of the vent terminal 60 is then folded downwardly over the top of the terminal, as illustrated in Figure 11, to give access to the apron support 120; the latter is placed on the additional batten 230, and the assembly is adjusted to a position, where the tubular portion 68 (or at least the bottom section of the lip 102)
surrounding that part of the portion 68, just rests on the top edge of the slates 202 and 204. In this position, the tubular portion 68 will project downwardly through the hole 218 formed in the roofing felt 220. Also, the lower part of the apron 100, which extends on opposite sides of the outlet part 62 of the terminal, will rest flat on the upper parts of the slates 202 and 204. The apron support 120 is then nailed to the additional batten 230.

The apron 100 is then unfolded, and the upper part of the apron is laid on the apron support 120. The top edge of the apron 100 extends just above the batten 215, and this top edge can be bent around the top side of the batten 215 if necessary, and in any case, the top part of the apron 100 is secured to the batten 215 by nailing (see Figure 12).

After that, the next row of slates is fitted, and the slotted slate 208 is fitted around the box portion 64 of the outlet portion 62 of the terminal. The position when the slate 208 has the top end of the slot 222 resting against the top end of the vent terminal 60, is illustrated in Figure 13. It will be noted that part of the apron 100 projects below the slate 208, but this projecting part of the apron can be cut off with a knife to finish off the assembly, when the slates 206 and 210 have been fitted alongside the slate 208. To some extent, the outlet portion 62 of the vent terminal 60 is then located within the slate 208.

Finally, a flexible vent pipe 180 (not shown in Figures 10 to 14) is secured to the lower end of the tubular portion 68 of the terminal, and the flexible vent pipe 180 can be connected to the top end of the
soil vent stack (not shown in Figures 10 to 14).

It will be seen that the only part of the vent pipe terminal which is visible on the outside of the building is the outlet portion 62. This is in any case relatively small compared to the roof, but also lies on the slates 202 and 204 and is partially embedded within the slate 208. Consequently, the projecting part of the terminal is unobtrusive, and if suitably coloured, will not be readily distinguishable, so that there is a great improvement in the appearance of the roof.

Moreover, the vent pipe terminal is properly sealed to the roof, because of the following factors:

(i) The flexible apron 100 is fitted in the recommended position underneath a superimposed slate.

(ii) The lower portion of the flexible apron 100 is sandwiched between the top upper surface of the slates 202 and 204 and the lower undersurface of the superimposed slate 208.

(iii) The upper portion of the apron 100 is bent over and tacked to the batten 215. In this position, it is nipped to the batten 215 by the superimposed slate 208; it is sandwiched tightly between the top undersurface of the slate 208 and the upper surface of the batten 215, and finally, it is nailed to the batten 215 by the nails used to secure the slate 208 to the batten 215, since these nails pass through the apron.

(iv) As the apron 100 should be larger in area than the slate 208, the same efficient fixing will extend to the slates on each side of the slate 208.

Furthermore, there is no unbroken vertical joint
because the flexible apron 100 is sealed or bonded to the outlet terminal 60. Additionally, where the flexible apron 100 extends over the "unsupported" area created by the single lap construction, it is now quite adequately supported by the apron support 120.

If any condensation forms in the outlet portion 62, it will flow down the outlet portion due to its inclination, to the drain holes 70, where it will escape on to the roof.

Figures 15 to 19 show a double lap slated roof, wherein each of the slates 300, 302 and 304 in one row of slates is superimposed on two slates of a preceding row (for instance the slate 302 is superimposed on the slates 306 and 308). It will also be noted, that approximately the top half of each slate is lapped by two superimposed slates, and with this construction, which is conventional, at every position over the roof area, there is at least a double-thickness of slates.

For the purpose of fitting a vent pipe terminal according to the present invention, a rectangular slot 348 is cut in the roofing felt 349, at a position adjacent to the top side of a batten 314. Also, corner rebates 350 and 352 are cut in a pair of slates 310 and 312 appertaining to a row of slates which is superimposed on the row including the slates 300, 302 and 304. Additionally, a single rectangular slot 354 is cut in a slate 320 of the row of slates which is superimposed on the row which includes the slates 310 and 312.

Before the tubular portion 68 of the vent terminal 60 is threaded through the hole 348 in the roofing felt, the apron support 150 (that is the narrow
apron support) is fitted to the terminal by sliding its fingers into the grooves 134. In this position, the apron support 150 provides a rigid support for only a central part of the upper region of the apron 100. The support 150 is of approximately the same width as the outlet portion 62 of the terminal 60.

When the row of slates including the slates 310 and 312 has been fitted, the hole 348 in the roofing felt will be aligned with the lower ends of the rebates 350 and 352 as illustrated in Figure 16. At that stage, the vent assembly is lowered into position, so that the tubular portion 68 passes through the opening 348, and the lip 102 on the apron 100 is received within the rebates 350 and 352. All the lower portion of the apron 100 then rests on the slates 310 and 312, leaving only a relatively short upwardly projecting portion of the apron. The upper end of the apron support 150 rests on a batten 315, which may be an additional batten inserted for this purpose. The upper part of the apron 100 will be folded over the vent outlet terminal as shown in Figure 11, to enable the apron support 150 to be nailed to the battens 316 and 315, and then the apron is unfolded, its top edge is bent around and nailed to the batten 315, and the top portion of the apron 100 is nailed to the batten 315 as illustrated in Figure 17.

As in the previous construction, the outlet portion 62 of the vent pipe and the lower part of the apron 100 rests on the slates of the row of slates below the vent pipe fitting. The upper row of slates including the slate 320 is then fitted, and the slate 320 is nailed to the batten 316, the nails passing through the apron 100, and further securing the apron in position. The appearance of the roof after the terminal
60 has been fitted is illustrated in Figure 19. The construction illustrated in Figures 15 to 19 gives all the advantages previously mentioned in relation to the construction illustrated in Figures 10 to 14. The narrow apron support 150 is used, because only a relatively small area of the apron 100 lies over an "unsupported" region of the roof.

In Figures 20 to 23, there is illustrated a method of fitting a vent pipe terminal in accordance with the invention, to a roof comprising single lap interlocking profiled tiles. The tiles 400 and 402 of one row are superimposed on the tiles of a preceding row, including the tile 404, and the overlap is relatively small and similar to the overlap of the single lap slates illustrated in Figures 10 to 14. In fact, the principal difference between the roof construction illustrated in Figures 20 to 23 and that illustrated in Figures 10 to 14, is that the tiles 400, 402, 404 have longitudinally extending undulations to enhance the appearance. Each tile has a lip 406 along its top edge, which hooks on to a batten 414 to retain the tile in position on the roof.

In the fitting of the terminal 60, after the row of tiles including the tiles 400 and 402 has been fitted, a rectangular opening 418 is formed in the roofing felt 420 adjacent to the top edge of the last laid row of tiles, to accept the tubular portion 68 of the vent terminal as in the previously described arrangements. The larger apron support 120 is fitted to the apron and terminal combination, and a short additional batten 430 is fixed to the rafters of the roof. The tubular portion 68 of the terminal is then pushed through the opening 418 in the roofing felt, and
the lower part of the apron 100 rests on the undulating top surface of the tiles 400 and 402, and the outlet section 62 is pressed down into position between two of the upwardly projecting undulations on the tiles. As illustrated in Figure 20, the outlet portion occupies a position between the undulation at one end of the tile 400, and the first undulation on the tile 402.

The top part of the apron 100 is folded over the outlet portion as illustrated in Figure 11, to give access to the apron support 120. The latter is nailed to the batten 430, and then the apron 100 can be unfolded, and its top portion secured by nailing to the batten 415 as shown in Figure 21, and in similar fashion to the securing method described with reference to Figure 12.

A tile 408 (see Figure 22) of the next succeeding row of tiles is formed with a side notch wide enough to receive the width of the box-like outlet portion 62 of the terminal 60, and in practice, the side notch must be wide enough to allow for a mortar bed 440 illustrated in Figure 22, of approximately the same width as the lip arrangement 442 provided along the edge of the tile 408 for engagement with the next tile. When the tile 408 has been laid in position as illustrated in Figure 22, the mortar bed 440 is applied, and then the next succeeding tile 410 can be placed in position, so that it engages with the lip arrangement 442 on the tile 408, it also engages with the side walls of the outlet portion 62 of the terminal, and it beds into the mortar 440.

At this stage, the lower portion of the apron 100
will project from the superimposed tiles 408 and 410 (see Figure 23) but if desired, this projecting part of the apron can be cut away. The terminal 60 is then neatly sited on the roof tiles, and an effective weather-proofing seal is provided by the apron 100, which in the "unsupported" region, has the benefit of support from the rigid apron support 120.

As a refinement of the fitting method illustrated in Figures 20 to 23, before the apron support 120 is fitted to the apron and terminal combination, it can be laid across one of the tiles, and pressed so that it adopts the contours of the tiles. Then, when the apron support is in position, it will hold the apron 100 pressed against the undersides of the undulations in the tiles above it. However, it has been found in practice that it is unnecessary to form the apron support in this way in the majority of cases, though the ability of the apron support to accept deformation of this kind may be useful in certain circumstances.

During the fitting of the flexible vent pipe 180, the ring handle 130 or 164 is used by the fitter, to hold the terminal 60 down on the slates or tiles, to prevent it being displaced upwardly, when the end of the flexible vent pipe 180 is being forced over the tubular portion 168 of the vent terminal.

Turning now to Figure 24, there is shown part of a cavity wall 500 surmounted by a slated roof 502. A soil vent pipe stack 504 is secured to the outside of the wall 500, and occupies a position very similar to that of the vent pipe 18 illustrated in Figure 1. With a soil vent pipe in this location, probably the most usual arrangement
for the vent pipe terminal is that which is illustrated in Figure 1, which involves carrying the vent pipe around the eave and guttering 506 of the building.

Figure 24 however shows the fitting of a vent pipe terminal 60 in accordance with the present invention at a position on the roof 502 which is sufficiently high on the roof, to ensure that even the bottom end of the outlet portion 62 of the terminal 60 is the required height above any window or door opening in the wall 500. The flexible vent pipe 180 is attached at its upper end to the tubular portion 68 of the terminal 60 on the underside of the roofing felt 508, and the vent pipe is then carried under the rafters of the roof, through the space between the roof and the top end of the cavity wall 500, where it is attached to the top end of the vent pipe 504.

Figure 24 illustrates the neatness of the arrangement. The flexible vent pipe 180 in effect extends the vertical vent stack 504 to the underside of the roof, and to a location such that when the terminal 60 is fitted, any regulations governing the distance between the terminal and openings in the wall of the building are met.

In Figure 25, there is illustrated another arrangement, in which the top end of a cavity wall 550 is shown. Part of the roof 552 of the building is also illustrated, and in this case, a vertical soil stack pipe 554 is fitted closely adjacent to the inside of the wall 550. With this arrangement, the pipe 554 will probably be secured to the inside of the wall 550.

Again, a vent pipe terminal 60 in accordance with the invention is fitted to the roof 552 at a
sufficient height to comply with any venting regulations. This arrangement illustrates the employment of a standard plastics elbow 556 which is pressed on to the tubular portion 68 of the terminal 60, the flexible pipe 180 being attached at one end to the elbow 556, and at the other end to the top end of the vertical vent stack 554. Again, from the outside of the building, the only venting feature which is visible is the terminal 60.

Figure 26 illustrates another arrangement, in which there is a cavity wall 600 and a roof 602. A vertical soil vent pipe 604 is located adjacent to the outside of the wall 600 and in this arrangement, the terminal 60 is fitted to the roof at a considerable distance from the top end of the vent pipe 604. With an arrangement of this nature, an elbow 606 is fitted to the tubular portion 68 of the terminal, and then a straight rigid polyvinylchloride pipe 608 is fitted to the elbow 606. The flexible vent pipe 180 extends the straight plastics pipe 608 and the top end of the vertical soil vent pipe 604. It will be appreciated, that if the terminal 60 has to be located high on the roof, then with the soil vent pipe 604 in the outside location, it will probably be necessary to use a relatively long rigid pipe 608 between the elbow 606 and the flexible vent pipe 180. Strictly speaking, there is no reason why the flexible vent pipe 180 should not continue from the vertical soil vent pipe 604 to the elbow 606, but it will probably be more economical to use a relatively short piece of the flexible vent pipe 180.

Finally, Figure 27 illustrates part of a roof of a building 650 adjacent to the ridge tiles 652. A vertical soil vent pipe 654 inside the building is well
away from the outer wall (not shown) so that it is near to a vertical projection of the ridge of the roof. In this situation, the terminal 60 is fitted to the roof 650 as previously described, and the flexible vent pipe 180 is fitted between the tubular portion 68 of the terminal and the top end of the pipe 654. Most of the flexible vent pipe 180 is vertical, but its top end is turned through an angle to enable it to fit on to the tubular portion 68 of the terminal.

It will be appreciated, that the angle of inclination of the terminal to the horizontal is always determined by the pitch of the roof. Moreover, the tubular portion 68 will always extend at 90° to the pitch of the roof. However, because a flexible vent pipe is employed between the tubular portion 68 and the soil stack vent pipe, variations in the angle of pitch of the roof can always be accommodated. Moreover, the apron 100 always lies substantially in the same plane as the base of the outlet portion 62 of the terminal, and there is no question of bending the apron relatively to the outlet portion. Localised bending of the apron is only required in order that it fits snugly against the slates or tiles with which it seals.

It has previously been mentioned, that the only part of the terminal arrangement which is visible on the outside of the building is the outlet portion 62. If this is made in a neutral colour such as black or grey, then it will be useable with a variety of coloured roofs. However, for some purposes it may be desirable to have the outlet portion, including the lid, coloured to match the colouring of the roof slates or tiles.
Another possibility is to manufacture the main portion of the terminal, that is to say the box of the outlet portion and the tubular portion 68 in a neutral colour, but to provide a variety of lids in different colours to match different colours of tiles. When the terminal is in position on the roof of a building, it is mainly the lid which is visible, and the sides of the outlet portion appear only as outlines to the lid. Therefore, if the lid itself is coloured to match the tiles, the overall appearance will be that the terminal is in a colour matching the tiles.

Yet another possibility is to mould the lid of the terminal in the same ceramic material as the roof tiles themselves. This of course ensures that the colour of the lid is identical with the colouring of the tiles. However, because of the difficulties in producing intricate formations in a moulded ceramic lid, the lid may then be made in two parts. One of these is the ceramic portion which provides the top surface and the overhanging parts of the lid, but this portion is simply in the form of a rectangular dish. A moulded plastics frame is provided which is a tight fit within the ceramic portion of the lid, and the moulded plastics frame has the formations including the internally projecting teeth to provide the special outlet arrangement of the terminal.

If the terminal is to be used as a roof vent, the terminal 60 is fitted to the roof in any of the ways described with reference to Figures 10 to 23 of the drawings. However the flexible pipe is not used, and the open end of the tubular portion 68 which projects into the loft space provides the ventilator inlet, the outlet being provided by the outlet portion 62.
1. A vent pipe terminal which is intended to extend through a roof of a building, characterised in that it comprises a tubular portion which in use will extend through the slates, tiles or other cladding of the roof, and a hollow box-like outlet portion extending laterally with respect to the tubular portion, the inside of the tubular portion communicating with the inside of the outlet portion, so that the terminal comprises an elbow arrangement, and the outlet portion having one or more outlet openings from its interior.

2. A vent pipe terminal as claimed in Claim 1, characterised in that the outlet part comprises an open-topped box and a lid, the lid overhanging the box and the outlet opening or openings being formed in the box adjacent to its top edges and therefore close to the underside of the lid when the latter is on the box.

3. A vent pipe terminal as claimed in Claim 2, characterised in that the lid has a downturned lip on its overhanging portions, spaced from the box wall when the lid is fitted to the box, the outlet opening or openings being protected by the overhanging part of the lid and its lip.

4. A vent pipe terminal as claimed in Claim 3, characterised in that there is a series of outlet openings in each side wall of the box along the top edge of that wall, there being lips on the side edges of the lid and spacing members on the box or the overhanging part of the lid to space the lips from their respective box walls.
5. A vent pipe terminal as claimed in any one of Claims 1 to 4, characterised in that a weather-proofing apron is sealed on to the tubular portion of the vent pipe terminal and extends outwardly from the all positions around that part of the vent pipe terminal.

6. A vent pipe terminal as claimed in Claim 5, characterised in that the apron is flexible.

7. A vent pipe terminal as claimed in Claim 6, characterised in that the apron is bonded on to the tubular portion of the terminal.

8. A vent pipe terminal as claimed in any one of Claims 1 to 7, characterised in that it includes a generally planar self-sustaining apron support adapted to be readily secured to the terminal itself.

9. A vent pipe terminal as claimed in Claim 8, characterised in that the apron support has a pair of fingers which are received in sockets formed in the terminal or a part fastened to the terminal.

10. A vent pipe terminal as claimed in Claim 9, characterised in that the sockets comprise grooves formed in the apron in the region of the junction between the tubular portion and the outlet portion of the terminal, the grooves being open at one end to allow the fingers to slide into the grooves.
11. A vent pipe terminal as claimed in any one of Claims 8, 9 and 10, characterised in that the apron support is deformable but self-sustaining (i.e. not flexible), so that on the one hand, it can be bent to any formation required to enable it to follow the contours of a roof tile, but on the other hand, it will retain that formation.

12. A vent pipe which is intended to extend through the roof of a building, characterised in that it comprises a vent pipe and a weather-proofing apron sealed to the outside of the vent pipe and extending outwardly from all positions around the vent pipe, the apron having a flexible nature such that it is not self-sustaining.

13. A vent pipe which is intended to extend through the roof of a building characterised in that it is combined with an apron support extending from the pipe to an extent such that it can provide an effective support for a weather-proofing apron located underneath a tile or slate of the roof in a region, where because of the slate or tile arrangement, the apron would otherwise be unsupported on the underside.
Fig. 1.
Fig. 20.
Fig. 21.