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(54) **FLASHING ADAPTABLE TO DIFFERENT SHAPES OF ROOF**

(76) Inventors: **Andre Bibaud**, Quebec (CA); **Mario Pelletier**, Quebec (CA)

Correspondence Address:
JACOBSON HOLMAN PLLC
400 SEVENTH STREET N.W.
SUITE 600
WASHINGTON, DC 20004 (US)

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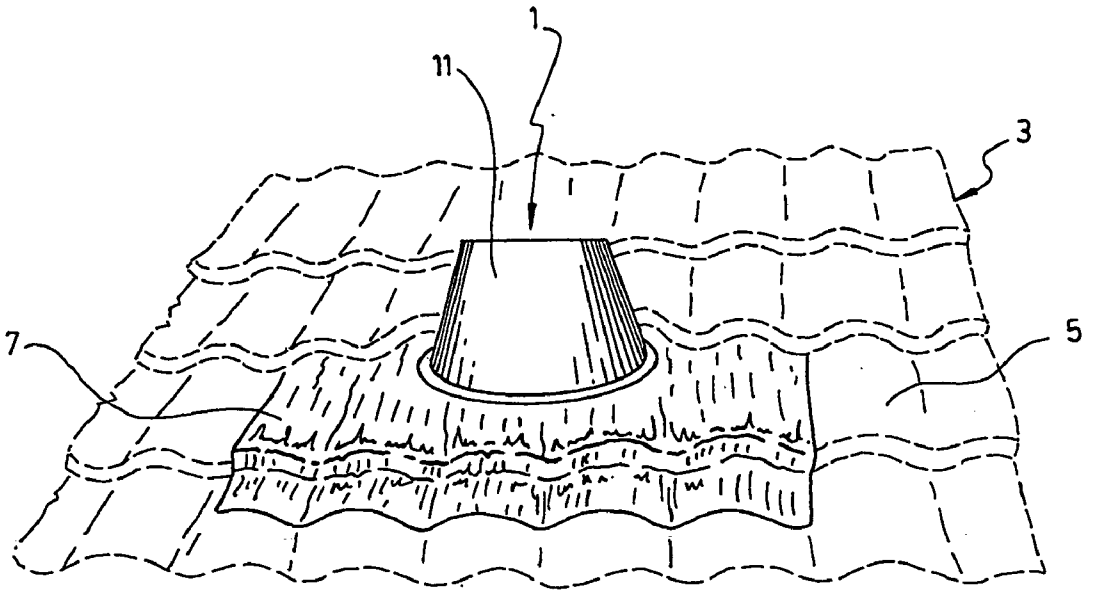
(57) **ABSTRACT**

Disclosed is a flashing for weatherproofing an aperture made in a roof to allow passage of a chimney through the roof. The flashing has a malleable base member adapted to be mounted over the aperture made in the roof and on a surface of the roof surrounding the aperture and to match the shape of roof surface. The base member comprises a panel having edges adapted to be positioned on the roof and an opening large enough to allow passage of the chimney therethrough. The flashing also comprises a surrounding member being tubular in shape and extending upwardly from the base member to fit around the chimney. The bottom and surrounding structures are linked through a joining ring structure encircling a bottom opening of the surrounding member.



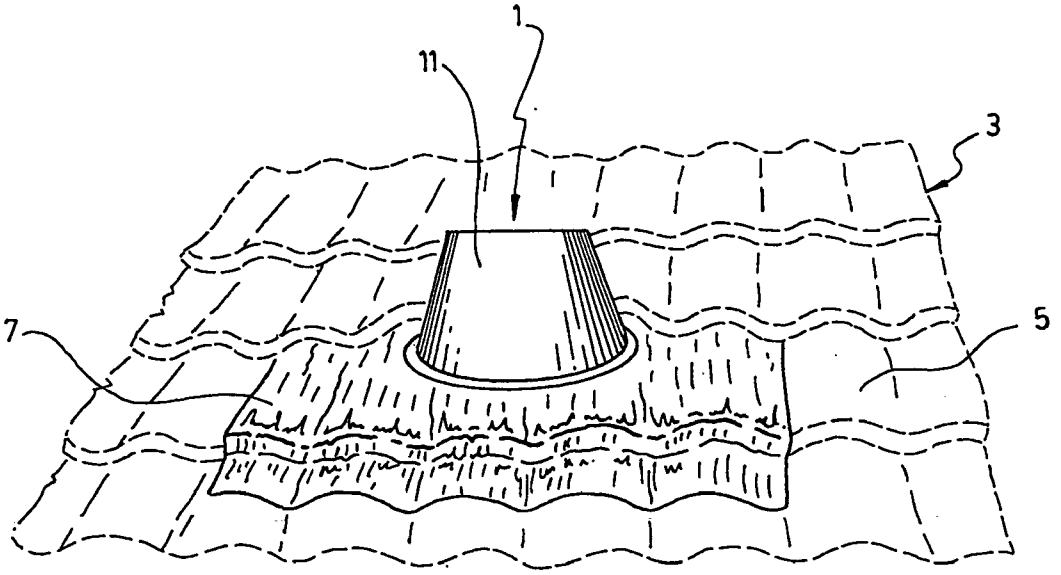


FIG. 1

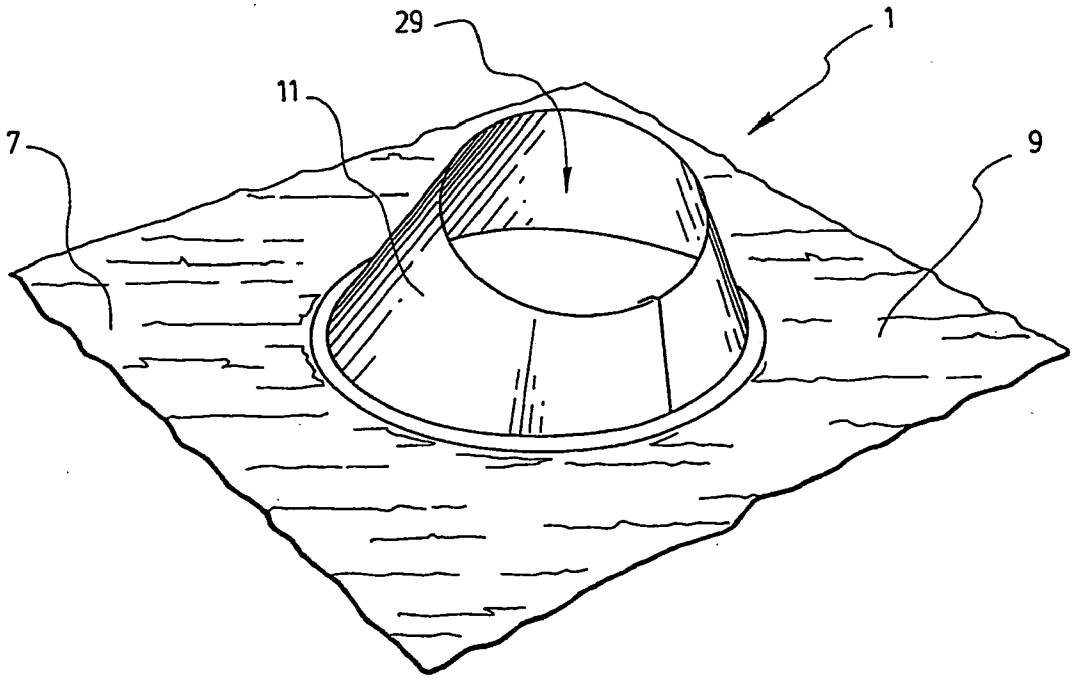


FIG. 2

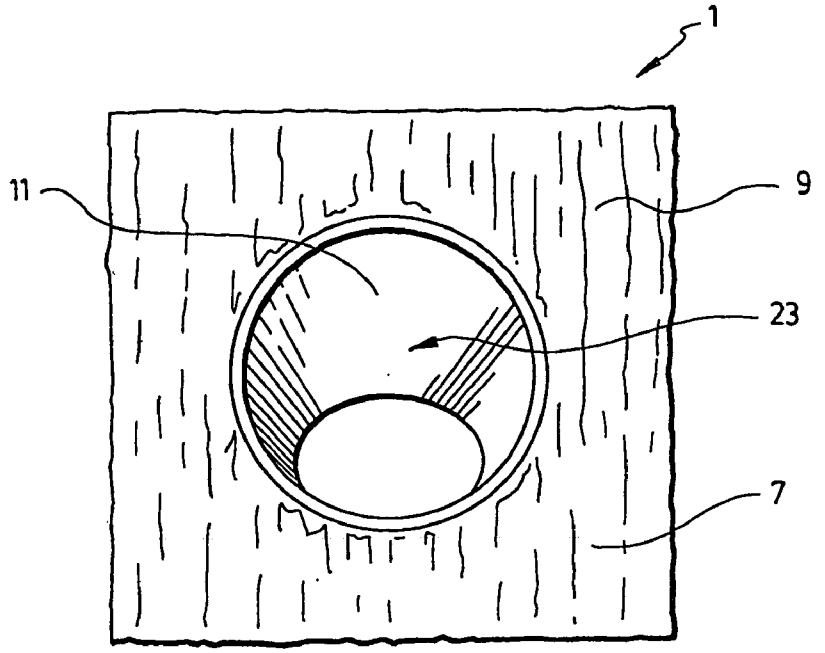


FIG. 3

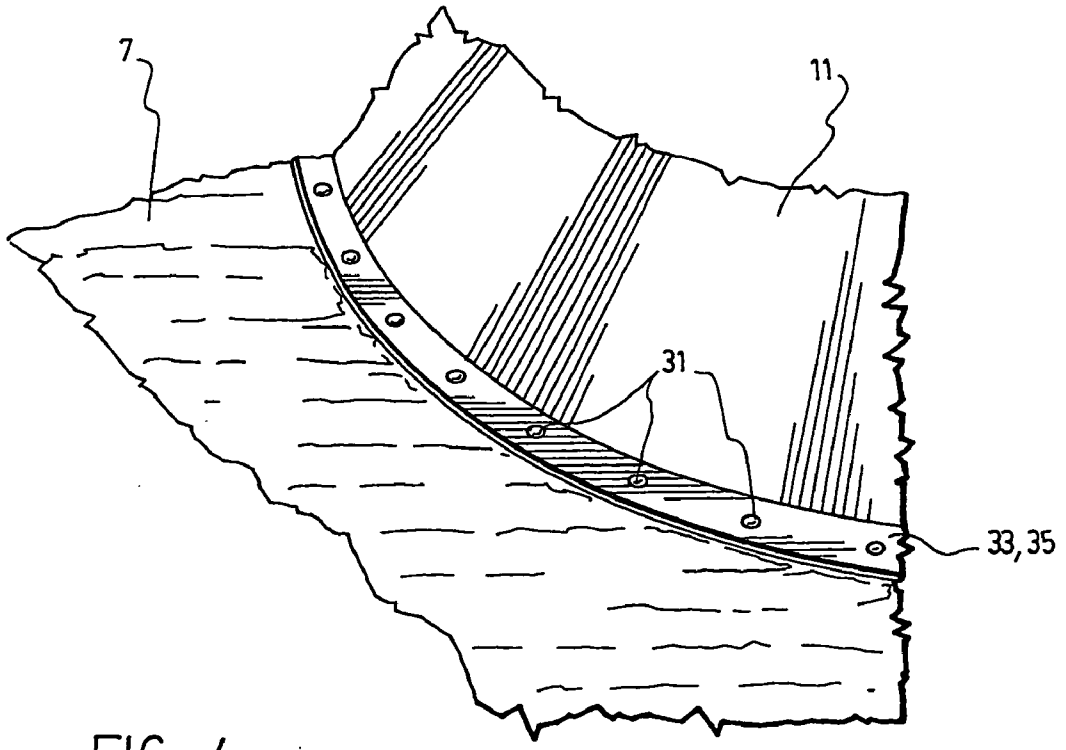


FIG. 4

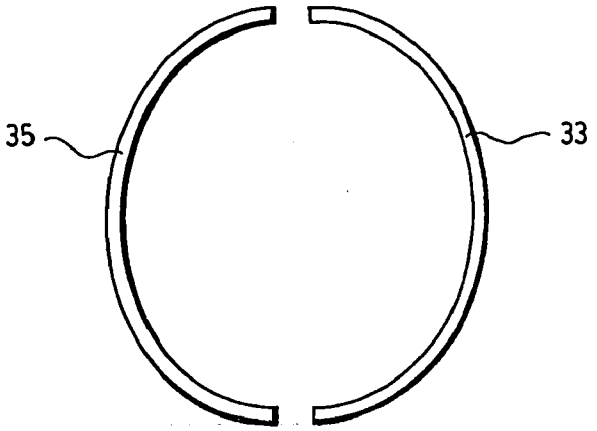


FIG. 5

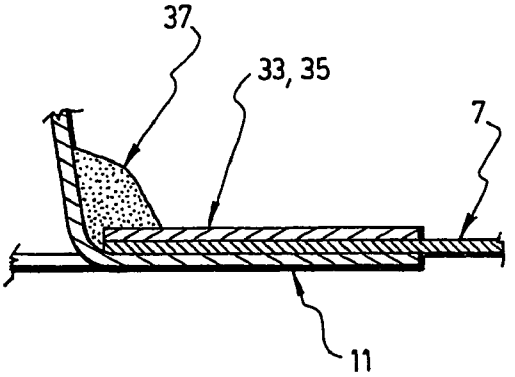


FIG. 6

(DETAIL "A")

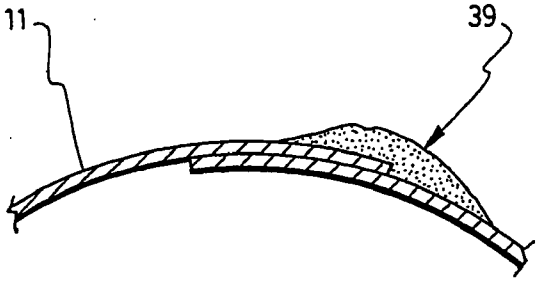


FIG. 7

(DETAIL "B")

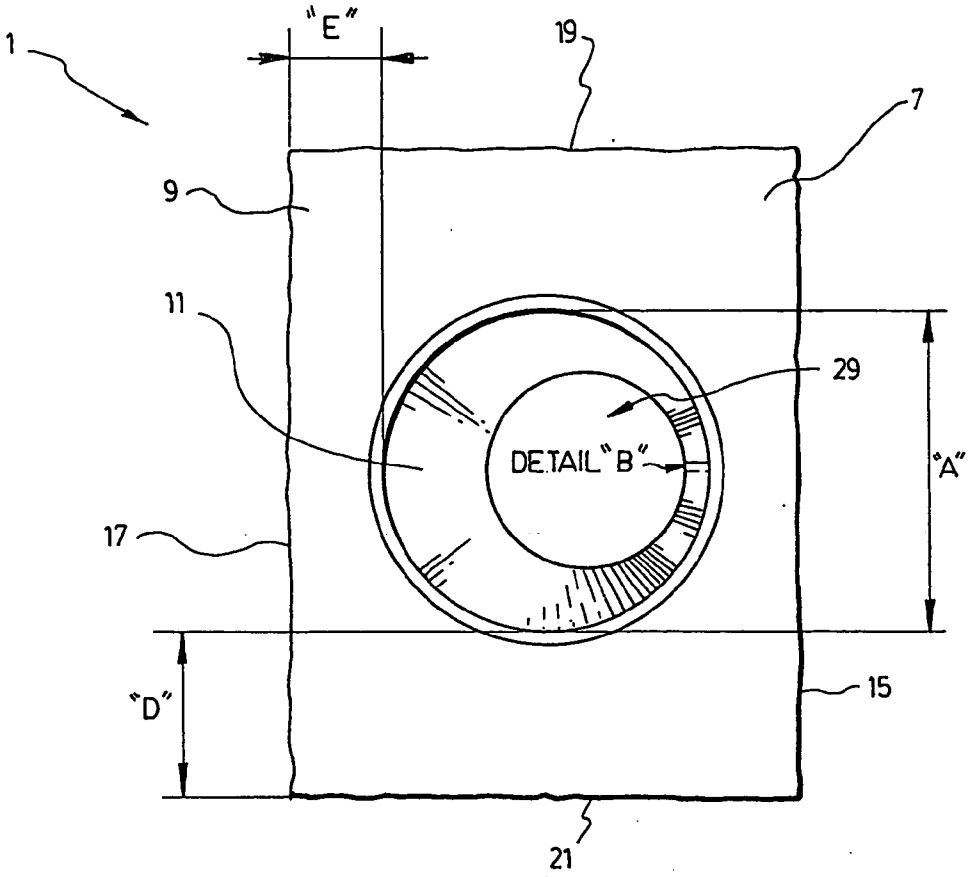


FIG. 8

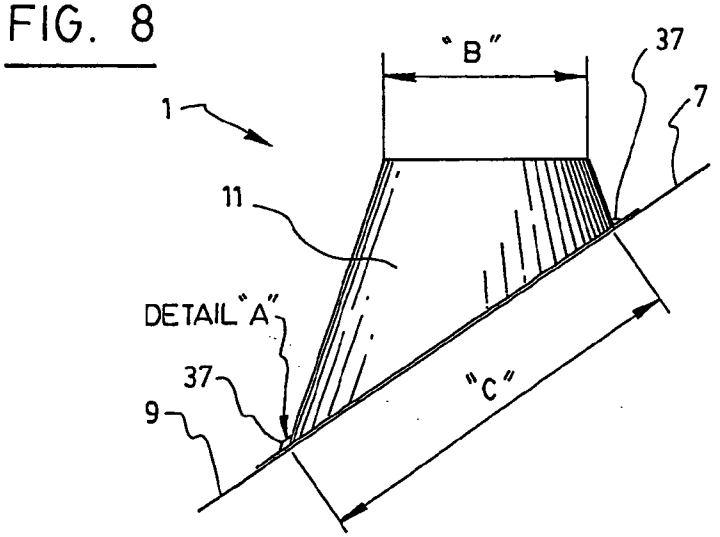


FIG. 9

FLASHING ADAPTABLE TO DIFFERENT SHAPES OF ROOF

FIELD OF THE INVENTION

[0001] The present invention relates to a flashing useful for weatherproofing an aperture made in a roof. More particularly, it relates to a flashing adapted for use on a roof having different shapes.

BACKGROUND OF THE INVENTION

[0002] It is of common practice in the construction industry to use a flashing to seal the interstitial gap between the roof and a vertical member such as a pipe, a venting duct or a chimney passing through an aperture made in the roof. In addition to ensuring weatherproofing of the roof aperture, the flashing is usually also devised to ensure proper drainage of the water that can accumulate on the roof.

[0003] However, due to the different profiles and overall shapes of-various roofing components such as tiles used on roofs, current factory-built flashings do not provide adequate sealing of the gap between the vertical member and the roof and, in several cases of tiled roofs, flashings are difficult or even impossible to install.

[0004] It is common practice on construction sites to use lead flashings to be dressed to match the shape of roof tiles. Unfortunately, most pre-fabricated chimney installers are not familiar with this practice. Consequently, installation of the flat base of a pitched flashing positioned over an aperture made in a tiled roof and fastening of the flashing on a roof that does not have a generally flat surface becomes problematic.

[0005] Certain prior art flashings have attempted to solve sealing problems between the vertical member and the roof by using combinations of malleable materials that are adaptable to different roof shape profiles. Such combinations use a surrounding member made of EPDM rubber or silicone to fit around the vertical member. The surrounding member is attached to an aluminum base member that can be adapted to the shape of the roof surface. Unfortunately, the use of rubber or silicone is not advisable when the flashing is used to seal the gap between a chimney and a roof, due to the high temperatures that may be attained at the outer surface of the chimney. Certification of the use of such flashings with chimneys is therefore complicated due to the choice of materials.

[0006] Thus there is still presently a need for flashings that are easily adaptable and that can be easily installed on a variety of shapes of tiled roofs or the like having chimneys extending therefrom.

SUMMARY OF THE INVENTION

[0007] An object of the present invention is to provide a roof flashing for use on a roof, different from known pitched flashings, more particularly for use on different shapes of tiled roof.

[0008] More specifically, the object of the present invention is to provide a flashing for weatherproofing an aperture made in a roof, to allow the passage of a chimney through the roof.

[0009] Like existing pitched flashings, the flashing according to the invention comprises a base member adapted to be mounted over the aperture made in the roof and on a surface of the roof surrounding the aperture, and a surrounding member extending upwardly from the base member to fit around the chimney passing through the roof.

[0010] The base member is adapted to match the shape of roof surface and comprises a panel having a top edge adapted to be positioned on an upper part of the roof, a bottom edge adapted to be positioned on a lower part of the roof. The panel also has two opposite side edges and an opening. The opening is large enough to allow passage of the chimney therethrough.

[0011] The surrounding member extends upwardly from the base member to fit around the chimney. The surrounding member is tubular in shape and comprises a top opening sized to fit around the chimney. The surrounding member also comprises a bottom opening coaxially positioned on top the opening of the panel of the base member. The bottom opening is sized to allow passage therethrough of the chimney.

[0012] The flashing according to the present invention further comprises a joining ring structure. The surrounding member, the base member and the joining ring structure are joined together through fastening means that traverse the base member sandwiched between the joining ring structure and the surrounding member.

[0013] Preferably, the fastening means is a series of spot welds or rivets.

[0014] Thanks to its particular structure, the flashing according to the invention may be installed in a very easy and efficient manner on any kind of shape of roofs, including roofs with different tile configurations.

[0015] In all cases, the installation problems mentioned hereinabove are solved. The flashing according to the invention can be prefabricated in a manufacturing environment rather than be built on site prior to installation. Thus, the flashing according to the invention is very efficient and versatile and can be used in an efficient way on any kind of shape of roof or tile thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The invention and its advantages will be better understood upon reading the following non-restrictive description of a preferred embodiment of it, made with reference to the accompanying drawings, in which:

[0017] **FIG. 1** is a perspective view of a flashing according to a preferred embodiment of the invention installed on a tiled roof;

[0018] **FIG. 2** is a perspective view of a flashing according to a preferred embodiment of the invention;

[0019] **FIG. 3** is a bottom view of the flashing shown in **FIG. 2**;

[0020] **FIG. 4** is an enlarged view of the interface between the base member and the surrounding member, seen from the side having the joining ring;

[0021] **FIG. 5** is a top view of the joining rings used at the interface between the base member and surrounding member shown in **FIG. 4**;

[0022] **FIG. 6** is a side view illustrating the arrangement between the base member, surrounding member, joining ring and sealant;

[0023] **FIG. 7** is a side view illustrating the application of sealant to the surrounding member;

[0024] **FIG. 8** is a top view of the flashing according to a preferred embodiment of the invention; and

[0025] **FIG. 9** is a side elevation view of a flashing according to the invention as shown in **FIG. 8**.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

[0026] As aforesaid and shown in FIGS. **1** to **3**, the flashing **1** according to the invention is intended to be used for weatherproofing the gaps that exist in-between a roof **3** and a chimney passing therethrough (or alternatively a pipe, a venting duct or any other kind of member having to pass through the roof). More particularly, the flashing **1** according to the present invention can be installed on different shapes of roof or tiles **5** thereon.

[0027] As shown in **FIG. 2**, the flashing **1** comprises a base member **7** adapted to be mounted over an aperture made in the roof **3** to allow passage of a chimney. The flashing **1** also comprises a surrounding member **11** extending upwardly from the base member **7** to fit around the chimney.

[0028] As shown in **FIG. 3**, the base member **7** comprises a panel **9** of generally quadrilateral shape. The panel **9** is provided with an opening **23** large enough to allow passage of the chimney therethrough.

[0029] In accordance with a further preferred aspect, the base member **7** is adapted to match the shape of the roof or any tiles thereon. Preferably a malleable material is chosen to more easily adapt to the shape of the roof or tiles thereon. A preferred material in this case is lead, as lead is the most malleable of the common metals and can easily be shaped without fracturing. Alternatively, the base member **7** could be made of another malleable material, such as aluminium.

[0030] The flashing **1** further comprises a joining ring structure for joining the base member to the surrounding member. In a preferred embodiment of the invention shown in **FIG. 4**, the joining ring structure comprises two half joining rings **33, 35** (shown in isolation in **FIG. 5**) used to attach the surrounding member **11** to the base member **7**. The joining rings **33, 35** are attached to the surrounding member **11** through fastening means, preferably a series of spot welds **31** or rivets, that traverse the base member **7**. As shown in **FIG. 6**, in an area surrounding the opening **23** where the spot welds are made, the base member **7** is sandwiched between the joining rings **33, 35** and the surrounding member **11**. The weld between the joining rings **33, 35**, the base member **7** and the surrounding member **11** is covered with silicone **37** or another sealant to ensure proper sealing of the interface. As shown in **FIG. 7**, a sealant **39** can be applied to other areas of the flashing **1** such as on the surrounding member **11**.

[0031] **FIGS. 8 and 9** illustrate the general dimensional relationships between the base and surrounding members. The panel **9** of the base member has a top edge **15** which is adapted to be positioned on an upper part of the roof, a bottom edge **17** which is adapted to be positioned on a lower part of this roof and two opposite side edges **19, 21**.

[0032] As also shown in **FIGS. 8 and 9**, the surrounding member **11** is tubular in shape, preferably made of metal, and attached to the base member **7** from which it extends upwardly. The surrounding member **11** comprises a top opening **29** sized to fit around the chimney passing through the roof and a bottom opening coaxially positioned on top the opening **23** of the panel **9** of the base member **7**. Preferably, the top opening has a ¼ inch clearance from the chimney, but this clearance can be varied. Of course, the bottom opening must also be sized to allow passage therethrough of the chimney. The rigid surrounding member **11** maintains required clearances between the chimney and surrounding combustible materials, as well as ensuring the structure's vertical stability.

[0033] As shown in **FIG. 8**, the surrounding member **11** is preferably shaped as a funnel. Thus, its top opening **29** is smaller in size than its bottom opening.

[0034] In as much as, in most constructions, the chimney, pipe or other member that have to pass through the roof, extend vertically and the roof on which the flashing **1** is intended to be installed for weatherproofing purpose is itself inclined, the surrounding member **11** has to be oriented at an angle selected as a function of the inclination of the roof. In other words, the central axis of this surrounding member **11** will be inclined toward the top edge **15** of the panel **9** of the base member **7**.

[0035] In such a case also, the top opening **29** of the surrounding member **11** will be substantially circular in shape and the bottom opening of the surrounding member **11** will be substantially elliptical in shape and sized to match the size of the opening **23** made in the panel **9** of the base member **7**.

[0036] **FIG. 9** is illustrative of the shape and inclination that may have the surrounding member **11** as a function of the actual slope or inclination of the roof. **FIG. 9** shows the shape that the flashing **1** must have to fit on a roof having a pitch of 8/12 to 12/12. The expression "roof pitch" as used hereinabove refers here to a measurement used to quantify the steepness a roof. It is measured by the rise in inches for each 12 inches of horizontal run. The larger the fraction, the steeper the roof is. Of course, other shapes could be selected depending on the user's needs.

[0037] The following Tables 1 to 3 include examples of the dimensions that may have the flashing **1** according to the invention for different roof pitches. As can be appreciated, these dimensions vary as a function of the diameter of the chimney. Value (A) denotes the width of the elliptical bottom opening of the surrounding member **11** and value (B) the diameter of the top opening **29** of the same member **11**. Value (C) represents the length of the elliptical bottom opening of the surrounding member **11**. Value (D) denotes the spacing between the surrounding member **11** and the opposite edge **21** of the base member **7**. Value (E) denotes the spacing between the surrounding member **11** and the bottom edge **17** of the base member **7**.

TABLE 1

Dimensions (in inches) of a flashing for a roof with a pitch of 1/12 to 7/12

	Diameter of the chimney (inches)			
	5	6	7	8
A	12	13 1/8	13 1/2	14 1/2
B	7 3/8	8 3/8	9 3/8	10 3/8
C	12 5/8	13 7/8	14 1/4	15 3/8
D	9	8 7/16	8 1/4	7 3/4
E	8 11/16	8 1/16	7 7/8	7 5/16

[0038]

TABLE 2

Dimensions (in inches) of a flashing for a roof with a pitch of 8/12 to 12/12

	Diameter of the chimney (inches)			
	5	8	7	8
A	14 1/8	13 3/4	15	16 1/16
B	7 3/8	8 3/8	9 3/8	10 3/8
C	17 1/16	16 1/2	18 1/16	19 7/8
D	7 15/16	8 1/8	7 1/2	7
E	9 1/2	9 3/4	9	8 1/16

[0039]

TABLE 3

Dimensions (in inches) of a flashing for a roof with a pitch of 12/12 to 21/12

	Diameter of the chimney (inches)			
	5	6	7	8
A	12 3/4	13 15/16	15	16 3/8
B	7 3/8	8 3/8	9 3/8	10 3/8
C	21	23 3/16	25 1/16	27 1/4
D	8 5/8	8	7 1/2	6 13/16
E	9 1/2	8 3/8	7 1/2	6 3/8

[0040] The installation of the flashing **1** onto a roof through which passes a chimney may be carried out using the following detailed sequence of steps to which may be added a plurality of optional steps.

[0041] 1. aligning the axis "X" (or centerline) of the flashing **1** with the centerline "Y" of the chimney;

[0042] 2. drawing the interior outline of the surrounding member **11** of the flashing on the roof;

[0043] 3. removing the flashing **1** and cutting an aperture in the roofing material by following the previously drawn interior outline;

[0044] 4. cutting a slot parallel to the peak of the roof and centered along an axis passing through the middle of the aperture, so as to receive the top edge **15** of the panel **9** of the base member **7**. Alternatively, certain tiles or a surface in the upper part of the roof above the aperture can be lifted to accept the top edge;

[0045] 5. inserting the top edge **15** of the base member **7** of the flashing into a slot (or under the lifted tiles or surface) and resting the bottom edge **17** of the base member **7** of the flashing towards the bottom part of the roof;

[0046] 6. applying pressure to the top surface of the base member in various locations so that the base member adapts to the shape of the roof or tiles thereon;

[0047] 7. fastening/sealing the base member **7** of the flashing to the roof using an external grade sealant;

[0048] 8. inserting the chimney through the flashing; and

[0049] 9. installing a storm collar around the junction of the flashing **1** and the chimney and optionally sealing the storm collar to the chimney with a caulking roll, external grade sealant or silicone.

[0050] As aforesaid, a main advantage of the flashing according to the invention is that it can be efficiently installed onto a tiled roof. Such makes it possible to install the flashing **1** onto any shape of tiled roof.

[0051] In practice, the aperture made in the roof can be of a shape different from the one of opening made in the flashing. The roof aperture can, for example, be rectangular. Similarly, both the base member and surrounding member can be of different shapes.

[0052] Of course, it may be understood that the present invention has been described in detail hereabove and illustrated in the accompanying drawings. As a matter of fact, numerous obvious modifications could be made to it without departing from the scope or spirit of the present invention as defined in the appended claims.

1. A flashing for weatherproofing an aperture made in a roof to allow passage of a chimney through said roof, said flashing comprising:

a) a malleable base member adapted to be mounted over the aperture made in the roof and on a surface of the roof surrounding the aperture, said base member adapted to match the shape of the roof surface and comprising:

a panel having a top edge adapted to be positioned on an upper part of the roof, a bottom edge adapted to be positioned on a lower part of the roof, two opposite side edges and an opening, said opening being sized to allow passage of said chimney therethrough;

b) a rigid surrounding member extending upwardly from said base member to fit around said chimney, said surrounding member being tubular in shape and comprising:

a top opening sized to fit around said chimney; and

a bottom opening coaxially positioned on top the opening of the panel of the base member, said bottom opening being sized to allow passage therethrough of said chimney; and

c) a joining ring structure,

wherein the surrounding member, the base member and the joining ring structure are joined together through fastening means that traverse the base member sandwiched between the joining ring structure and the surrounding member.

2. The flashing according to claim 1, wherein the fastening means is a series of spot welds.

3. The flashing according to claim 1, wherein the fastening means is a series of rivets.

4. The flashing according to claim 1, wherein the malleable base member material is selected from a group consisting of lead and stainless steel.

5. The flashing according to claim 1, wherein the surrounding member is funnel-shaped and its top opening is smaller in size than its bottom opening.

6. The flashing according to claim 1, wherein the surrounding member has a central axis, and said central axis is inclined toward the top edge of the panel of the base member.

7. The flashing according to claim 1, wherein the top opening of the surrounding member is substantially circular in shape and the bottom opening of the surrounding member is substantially elliptical in shape.

8. The flashing according to claim 1, further comprising a sealant applied at an interface between the joining ring structure, the base member and the surrounding member.

9. The flashing according to claim 1, wherein the joining ring structure comprises two half-rings.

10. The flashing according to claim 1, further comprising a sealant applied at a junction of the roof and the base member of the flashing.

11. The flashing according to claim 1, further comprising a storm collar around the top opening of the surrounding member and the chimney.

12. The flashing according to claim 1, wherein the roof is made of tiles.

13. The flashing according to claim 4, wherein the surrounding member is funnel-shaped and its top opening is smaller in size than its bottom opening.

14. The flashing according to claim 13, wherein the surrounding member has a central axis, and said central axis is inclined toward the top edge of the panel of the base member.

15. The flashing according to claim 14, wherein the top opening of the surrounding member is substantially circular in shape and the bottom opening of the surrounding member is substantially elliptical in shape.

16. The flashing according to claim 15, further comprising a sealant applied at an interface between the joining ring structure, the base member and the surrounding member.

17. The flashing according to claim 16, wherein the joining ring structure comprises two half-rings.

18. The flashing according to claim 17, further comprising a sealant applied at a junction of the roof and the base member of the flashing.

19. The flashing according to claim 18, further comprising a storm collar around the top opening of the surrounding member and the chimney.

20. The flashing according to claim 19, wherein the roof is made of tiles.

* * * * *