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(54) **Cowl**

Schornsteinkopf

Chapeau de cheminée

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**EP-A- 0 182 534**                      **EP-A- 0 214 087**  
**BE-A- 901 401**                      **FR-A- 2 435 672**  
**GB-A- 885 106**

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## Description

**[0001]** This invention relates to cowls, namely constructions for fitting to the distal end of a chimney pot or a flue pipe for exhaust gases, usually from a domestic fire, boiler or burner. Such constructions are generally designed to at least mitigate the effect of wind, rain or other inclement atmospheric conditions.

**[0002]** The industry is replete with designs for cowls. Few such designs are manufactured in any quantity for any length of time. The great majority of designs are too complicated for mass production and thus too expensive.

**[0003]** Even where designs of cowl have achieved a substantial useful life in manufacture, the design of the cowl has generally been achieved without serious consideration for the aerodynamic flows resulting from the geometry chosen. That the cowl works at all has frequently been a result more of luck than of good design. On examination, many of the more successful designs of cowl achieve a measure of that success as a result of creating a venturi effect at the top of the chimney or flue duct which has the effect as wind blows of sucking out smoke and exhaust gases. In other words, the effect of wind flow has been to improve the efficiency of the cowl and hence of the chimney or flue rather than to cause a downdraught having precisely the opposite effect.

**[0004]** One such family of cowls which achieve a venturi effect consist of a body of stainless steel formed as a stepped cone, each circumextending step of the cone being narrower than the preceding one in the direction of the distal extremity of the cowl. Above the cone and across the opening, but well separated from it, is a flat top usually with a disc suspended beneath it. Whether the designers intended this construction to produce a venturi effect, in practice it does do so after a fashion, but not very effectively.

**[0005]** Another design to be produced specifically to achieve a venturi effect is illustrated in cross-section in Fig. 1 of the drawings which follow. The system includes a number of generally dish-shaped discs open in the centre and held together by a number of vertical posts. Across the centre of the cowl between the top two discs is an element described as an aerofoil in the literature. Though the literature refers to the space between the lower two discs providing a venturi effect, this will largely be exacerbated by the space between the lower disc and the chimney which appears to achieve an opposite effect and also by the space between the upper two discs which again appears to achieve an opposite effect. The system which in a complete arrangement also has a circumextending bird guard within the central space is complicated to manufacture and uncertain in its aerodynamic effect.

**[0006]** With a view to designing an improved construction of chimney cover designed in effect to cap or close off an otherwise inoperative chimney vent, I pro-

duced a novel design, now the subject of UK Registered Design No. 2 035 434 which has proved easy to fabricate and successful in use. As will become clear from the description below, the preferred embodiments of my novel design of cowl builds on and makes use of the technology I developed in connection with the chimney capper.

**[0007]** In addition to its other shortcomings noted above, the design described above is less than ideal for one further reason, namely that the cowl has a substantial vertical extent of the order at least of the diameter of the chimney flue with which it is intended to cooperate. In modern cowl design a relatively flat or shallow design in which the vertical height of the cowl is significantly less than the diameter of the chimney opening with which the cowl is designed to cooperate is preferred.

**[0008]** An example for a cowl comprising two disc-shaped members with a space therebetween creating a venturi effect is known by EP-A-214 087.

**[0009]** The present invention has arisen from my work seeking to improve upon the design of cowls generally and to provide a true venturi design which operates efficiently and effectively both to exclude rain and other precipitation and effectively remove smoke and other exhaust flue gases while at the same time being relatively shallow in configuration and easy to fabricate.

**[0010]** The invention provides a cowl, as defined in Claim 1.

**[0011]** Because the spacing of the first member above the distal end of the chimney or flue is relatively small, the cowl has a generally shallow compact appearance. Nevertheless, by having the spacing between the two disc shaped members at its least at the periphery of the centre opening of the second member, a strong venturi effect is created above the centre opening in the second member. Since the construction is effectively open through 360° apart from such obstruction as may be caused by the first fixing means, the venturi effect is both strong and nondirectional. In other words, from whichever quarter the wind blows and whether the wind direction should change or not, the effect of the wind is that smoke and other exhaust gases tend to be drawn vertically up the chimney to be entrained in air blowing across the top of the chimney. The venturi effect is enhanced the faster the wind speed.

**[0012]** The first fixing means may conveniently comprise vertical posts mounted between and connecting the two discs. The first disc may be completely flat but in one arrangement described below is slightly dished by the creation of shallow generally radial flutes in the disc which also serve a stiffening function as well as slightly dishing the disc. The second member is dished to a substantially greater extent than the first member. Again this is preferably achieved by means of fluting. The same tool can be made to form the flutes both in the first and in the second member, the flutes in the second member being substantially greater than in the first

member. The flutes can be formed by pressing and may form a housing for hook bolts which serve as the second fixing means for attaching the second member and thus the unit as a whole to the chimney pot or flue pipe.

**[0013]** A circumextending bird guard mesh is preferably mounted between the first and second members radially inwardly of the vertical posts.

**[0014]** Though I have referred to the first and second members as being disc shaped and as having a diameter, it will be readily understood that it is not necessary that the disc be truly circular in configuration, although this will usually be the most convenient arrangement. The disc may have a square or other straight edge profile and "diameter" is to be interpreted appropriately depending upon the external profile of the disc.

**[0015]** While an arrangement in which the second member itself rests on the distal end portion of a chimney or flue results in a cowl which is commendably shallow in configuration, and works well in high wind speed because a substantial venturi effect is created, I have found that in situations of only gentle wind or none at all, the fact that the first member which is fully closed is relatively close to the distal end of the chimney or flue results in rather more obstruction to the natural up-draught of smoke or flue gases than is desirable. In a modified and preferred arrangement, this problem is overcome by mounting the second member above a third member, the third member directly resting on the distal edge of the chimney or flue. The second and third members are spaced by a distance which may be greater than the distance between the first and second members and in the most preferred arrangement are identical fluted shallow dished discs, apart from the size of the central opening in the second and third members, the third member having an opening which may be of the order of or slightly less than the inner diameter of the flue or chimney. The disc cut from the third member to provide its central opening may be used to form the first member.

**[0016]** While the second and third members may be dished to the same extent or the second member may be dished less than the third member so there is also a venturi effect between the second and third members, the second member should not be dished to a greater extent than the third member because this would have the effect of counteracting the venturi effect between the first and second members.

**[0017]** The invention is hereinafter more particularly described by way of example only with reference to the accompanying drawings, in which:-

Fig. 1 is a sectional view of the prior proposed Aerocowl construction referred to hereinabove shown mounted to a chimney pot;

Fig. 2 is an overall perspective view of the prior Hodgson chimney capper referred to hereinabove;

Fig. 3 is an overall perspective view of the plate or disc member of the chimney capper of Fig. 2;

Fig. 4 is a side elevational view of an embodiment of a cowl, two of the hook bolts being omitted for clarity and the chimney pot being shown in section; Fig. 5 is a perspective view showing the first and second disc members without the other parts of the cowl;

Fig. 6 is a perspective view of the second or lower disc member;

Fig. 7 is a simplified schematic sectional view for the purpose of explaining the operation of a cowl constructed as shown in Figs. 4, 5 and 6; and

Fig. 8 is a view similar to Fig. 4 of an arrangement in accordance with the present invention.

**[0018]** In the arrangement of Fig. 1, to the distal end of a chimney pot 1 is fixed a flue stabilizer generally indicated 10 which comprises 3 annular members 11, 12 and 13 mounted on a plurality of posts 14 and with an obstruction, is mounted across the central through opening in the cowl between the upper 11 and middle 12 discs. The profile of discs or vanes 12 and 13 results in a venturi effect being produced where these two vanes open at 16 into the central region of the cowl but this will be negated by the opposing geometry of the passages 17 and 18 between the lowermost vane and the chimney pot and between the upper 11 and middle 12 vanes.

**[0019]** The chimney capper 20 shown in Figs. 2 and 3 is not intended to function as a cowl. Its purpose was solely to close off the top of a redundant chimney pot or flue. Capper 20 comprises a disc shaped member 21 best shown in Fig. 3 which is dished by the formation of shallow flutes 22 which are widest at the periphery of the disc and narrow towards the centre. These flutes provide housings for hook bolts 23, small plates being mounted across the underside of the flutings to hold the hook bolts in position. The hook bolts are threaded at 24 for wing nuts 25. The fluting can be formed by pressing with simple tools and so is easy to fabricate. The whole arrangement can readily be fitted to a redundant chimney pot or flue.

**[0020]** Cowl 30 of Figs. 4 to 7 makes use of the technology developed for the capper 20. Cowl 30 comprises two disc shaped members of which the upper 31 is only slightly dished by shallow fluting 32 in the manner of capper 20 while the lower 33 is dished to a greater extent by more pronounced fluting 34, again in the manner of capper 20. The two discs are best shown in perspective in Fig. 5 and the lower disc is shown in Fig. 6.

**[0021]** Thus, the upper disc 31 is nearly flat but dished just sufficiently for precipitation to run off. The slight fluting 32 will also strengthen the disc so that it can be made of thinner material than would otherwise be necessary without the fluting to strengthen it. The lower disc 33 has an open centre 35 and the two discs are fitted together by a plurality of posts 36 fitted to holes 37 drilled or punched in the two discs. A circumextending wire mesh 38 around the inside of the posts 36 serves to prevent

entry of birds into the interior of the cowl and down the chimney pot. Housings for hook bolts 39 are created in the flutings 34 by fixing small plates 40 across the underside of the respective flutings to the lower disc 33. It will thus be seen that the lower disc 33 is substantially similar to the capper 20 of Figs. 2 and 3 save for its centre opening 35.

**[0022]** As can readily be seen from Figs. 4 and 7, the vertical space between the first 31 and second 33 discs is least at the periphery 41 of centre opening 35 and progressively increases towards the outer edges of the disc. When the wind blows, from whichever quarter, as schematically illustrated in the diagrammatic sectional view of Fig. 7, a classic venturi is created in the centre of the cowl. As in any venturi, the narrowing cross-section results in an increased air flow velocity and thus a lowered pressure. The lower pressure in centre opening 35 results in smoke and fumes in the chimney being sucked up into the natural air flow to be carried away from the chimney cowl. Should the wind change to a different direction, the effect will remain because the cowl is essentially symmetrical (apart from the respective fixing means) over 360°.

**[0023]** Persons skilled in the manufacture of cowls will readily appreciate that a cowl of the basic construction illustrated, namely with the two disc members and the venturi created in the centre by having the least spacing between the two discs at the periphery of the centre opening and the spacing increasing monotonically outwards, could be created in various ways. I have found the fabrication techniques developed in connection with the Hodgson capper to be particularly useful in simple fabrication of embodiments of my cowl, but dished discs can be produced by many other alternative means.

**[0024]** The modified arrangement illustrated in Fig. 8 has a second member 33 which is essentially the same as the second member of the embodiment of Figs. 4, 5 and 6. As before, a first member 42 is mounted by posts 43 above the centre opening defined by the inner peripheral edge 41 of member 33. The spacing, however, between the first 42 and second 33 members is less in the arrangement of Fig. 8 than in the previously described embodiment. For a nominal 200 mm diameter flat disc 42 used as the first member, the spacing between the first and second members is desirably 16 mm or less. As can be seen, the second member does not rest on the chimney cowl itself as in the arrangement of Figs. 4, 5 and 6 but is itself supported by further posts 44 above a third member 45. Desirably, as shown in Fig. 8, the third member 45 is generally similar to the second member 33, being formed as a shallow fluted dish carrying the hook bolts 39 as in the previously described embodiment for fixing the cowl to the chimney top. The difference between the two shallow dishes 33 and 45 is that the opening defined by inner peripheral edge 46 of third member 45 is substantially greater than the opening defined in the second member. Desirably the material cut from the centre of member 45 before it is dished

using the same tool as for member 33 is used to provide the first member 42. In other words, the diameter of the opening in the third member is identical in size to the diameter of the first member 42 in this embodiment. A bird guard 47 is mounted between the second and third members.

**[0025]** We find that with this arrangement, a substantial venturi effect is created between the first and second members when there is any significant wind and that in the absence of any significant wind, the spacing between the second and third members, which is significantly greater than the spacing between the first and second members is such that the natural updraught of smoke and flue gases can still readily escape without significant obstruction. Though the overall height of the cowl is greater than in the arrangement of Figs. 4, 5 and 6, it will be seen that the overall height of the cowl is still less than the diameter of the chimney opening and significantly less than the overall diameter of the cowl. In other words, even with three members rather than two, the cowl of Fig. 8 still presents a relatively shallow profile.

**[0026]** Though I have found that the use of a first member as shown in Fig. 8 and a third member without any intervening second member but with the same spacing between the first and third members as shown in Fig. 8 will work perfectly satisfactorily in achieving a venturi effect when there is significant wind and will fail to obstruct the natural updraught of smoke and flue gases when there is little or no wind, I do not regard that arrangement as fully satisfactory because there is a danger of downdraught in the case where there is, for example, wind directed downwards at a 30° inclination and moreover precipitation could readily pass into the chimney flue. The intervening second member as shown in the arrangement of Fig. 8 cures both of these problems and I have found in practical tests that there is no significant downdraught, precipitation does not enter the chimney opening, the venturi effect is significant and effective in significant wind speeds and the cowl does not present undue obstruction to the natural upflow of smoke and flue gases in the situation where there is next to no wind. Needless to say, to ensure an adequate venturi effect between the first and second members, the geometry of the second and third members should be such that there is not a counteracting effect between those two members. In other words, while the members may have essentially the same inclination or the inclination of the second member may be less than the third member, the reverse situation where the inclination of the third member is less than that of the second member should be avoided.

## 55 Claims

1. A cowl comprising: a generally disc-shaped upper closure member (42) adapted to extend across the

opening of a chimney (1) or other flue; a lower member (45), adapted to be located directly on the chimney (1) or flue, the lower member (45) being dished to form a frustum of a cone which is open at its centre and; fixing means (43,44) for mounting the closure member (42) above the lower member (45); **characterised in that** an intermediate member (33), which is dished to form a frustum of a cone open at its centre, is provided between the upper and lower members (42,45); the intermediate member (33) is located, by the fixing means (43,44), between the upper and lower members (42,45), so that:

- a) the vertical separation between the upper closure member (42) and the intermediate member (33) defines an annular space which diverges from the outer periphery of the upper member (42) towards the central opening of the intermediate member (33), in order to create a venturi effect, due to airflow caused by wind from any direction, thereby reducing air pressure in the space above the central opening in the intermediate member (33); and
- b) the vertical separation between the lower closure member (45) and the intermediate member (33) is greater than the spacing between the upper member (42) and the intermediate member (33); and the opening in the lower member (45) is greater than that in the intermediate member (33); so that a natural updraught is not obstructed while reducing the risk of downdraught;
- c) the vertical spacing of the upper member (42) above the distal end of the chimney (1) or flue is less than the diameter of the chimney (1) or flue.

2. A cowl according to any preceding claim, in which the upper closure member (42) is generally flat.
3. A cowl according to Claim 1 or 2, in which the intermediate member (33) incorporates shallow generally radial flutes (34).
4. A cowl according to any preceding claim, in which the lower member (45) incorporates shallow generally radial flutes.
5. A cowl according to any preceding Claim, in which the lower member (45) is provided with fixing means in the form of hook bolts (39) to secure it to the chimney or flue.
6. A cowl according to Claims 3 or 4, in which the fixing means are housed in the shallow generally radial flutes.

7. A cowl according to any preceding claim, in which a circumextending bird guard mesh (47) is mounted between the intermediate and lower members (33,45).
8. A cowl according to any preceding claim, in which the dishing of the intermediate and lower members (33,45) is equal.
9. A cowl according to any preceding claim, in which the dishing of the intermediate member (33) is less than that of the lower member (45).
10. A cowl according to any preceding claim, in which the diameter of the central opening in the lower member (45) is in the order of or slightly less than the inner diameter of the chimney or flue.
11. A cowl according to any preceding claim, in which the diameter of the central opening of the lower member (45) is substantially the same as the diameter of the upper closure member (42), whereby the upper closure member can be formed by pressing out the opening in the lower member (45).
12. A cowl according to any preceding claim, in which the diameter of the upper member(42)is 200 mm.
13. A cowl according to any preceding claim, in which the minimum vertical spacing between the upper member (42) and the intermediate member (33) is 16 mm or less.
14. A cowl according to any preceding claim, in which the fixing means (43,44) comprises vertical posts mounted between and connecting the upper and intermediate members (42,33).

#### 40 Patentansprüche

1. Schornsteinkopf, bestehend aus: einem im Wesentlichen scheibenförmigen oberen Verschlusselement (42), das so ausgelegt ist, dass es sich über die Öffnung eines Schornsteins (1) oder eines anderen Abzugsrohres erstreckt; einem unteren Element (45), das so angepasst ist, dass es sich direkt auf dem Schornstein (1) oder Abzugsrohr befindet, wobei das untere Element (45) konkav gewölbt ist und einen in seinem Zentrum offenen Kegelstumpf bildet; und einer Befestigungsvorrichtung (43, 44) zur Montage des Verschlusselements (42) über dem unteren Element (45); **dadurch gekennzeichnet, dass** ein Zwischenelement (33), das konkav gewölbt ist und einen in seinem Zentrum offenen Kegelstumpf bildet, zwischen dem oberen Element (42) und dem unteren Element (45) vorgesehen ist, wobei das Zwischenelement (33)

durch die Befestigungsvorrichtung (43, 44) in einer Position zwischen dem oberen und dem unteren Element (42, 45) gehalten wird, so dass:

- a) der vertikale Abstand zwischen dem oberen Verschlusselement (42) und dem Zwischenelement (33) einen ringförmigen Raum bildet, der sich vom Außenumfang des oberen Elements (42) zur zentralen Öffnung des Zwischenelements (33) erstreckt, um einen Venturi-Effekt zu erzielen, der sich daraus ergibt, dass die Luftströmung, die sich durch Wind aus allen Richtungen bildet, zu einem verringerten Luftdruck im Raum oberhalb der zentralen Öffnung im Zwischenelement (33) führt; und
  - b) der vertikale Abstand zwischen dem unteren Verschlusselement (45) und dem Zwischenelement (33) größer ist als der Abstand zwischen dem oberen Element (42) und dem Zwischenelement (33) und die Öffnung im unteren Element (45) größer ist als die Öffnung im Zwischenelement (33), so dass ein natürlicher Aufwind nicht behindert wird und gleichzeitig die Gefahr eines Abwinds verringert wird;
  - c) der vertikale Abstand des oberen Elements (42) über dem distalen Ende des Schornsteins (1) oder Abzugsrohrs geringer ist als der Durchmesser des Schornsteins (1) oder Abzugsrohrs.
2. Schornsteinkopf entsprechend Anspruch 1, bei dem das obere Verschlusselement (42) im Wesentlichen flach ist.
  3. Schornsteinkopf entsprechend Anspruch 1 oder 2, bei dem in das Zwischenelement (33) flache, im Wesentlichen radial verlaufende Rinnen (34) integriert sind.
  4. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem in das untere Element (45) flache, im Wesentlichen radial verlaufende Rinnen integriert sind.
  5. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem das untere Element (45) Befestigungseinrichtungen in Form von Haken-schrauben (39) aufweist, um es am Schornstein oder Abzugsrohr zu befestigen.
  6. Schornsteinkopf entsprechend Anspruch 3 oder 4, bei dem die Befestigungseinrichtungen von den flachen, im Wesentlichen radial verlaufenden Rinnen aufgenommen werden.
  7. Schornsteinkopf entsprechend einem der vorheri-

gen Ansprüche, bei dem ein rundum verlaufendes Vogelschutzgitter (47) zwischen dem Zwischenelement (33) und dem unteren Element (45) montiert ist.

8. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem der Grad der konkaven Wölbung beim Zwischenelement (33) und beim unteren Element (45) gleich ist.
9. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem der Grad der konkaven Wölbung beim Zwischenelement (33) geringer ist als beim unteren Element (45).
10. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem der Durchmesser der zentralen Öffnung im unteren Element (45) ungefähr so groß oder geringfügig kleiner ist als der Innendurchmesser des Schornsteins oder Abzugsrohrs.
11. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem der Durchmesser der zentralen Öffnung des unteren Elements (45) im Wesentlichen genauso groß ist wie der Durchmesser des oberen Verschlusselements (42), wodurch das obere Verschlusselement durch Herausdrücken der Öffnung aus dem unteren Element (45) hergestellt werden kann.
12. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem der Durchmesser des unteren Elements (24) 200 mm beträgt.
13. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem der minimale vertikale Abstand zwischen dem oberen Element (42) und dem Zwischenelement (33) maximal 16 mm beträgt.
14. Schornsteinkopf entsprechend einem der vorherigen Ansprüche, bei dem die Befestigungsvorrichtung (43, 44) vertikale Stützen aufweist, die zwischen dem oberen Element (43) und dem Zwischenelement (33) montiert sind und diese miteinander verbinden.

## Revendications

1. Mitre de cheminée comprenant : un élément de fermeture supérieur globalement en forme de disque (42) conçu pour s'étendre à travers l'ouverture d'une cheminée (1) ou autre conduit de fumée ; un élément inférieur (45), conçu pour être placé directement sur la cheminée (1) ou conduit de fumée, l'élément inférieur (45) étant bombé pour former un tronc d'un cône qui est ouvert en son centre et ; des moyens de fixation (43, 44) permettant de monter

l'élément de fermeture (42) au-dessus de l'élément inférieur (45) ; **caractérisée en ce qu'un** élément intermédiaire (33), qui est bombé pour former un tronç d'un cône ouvert en son centre, est prévu entre les éléments supérieur et inférieur (42, 45) ; l'élément intermédiaire (33) est placé, par les moyens de fixation (43, 44), entre les éléments supérieur et inférieur (42, 45), de telle sorte que :

- a) la séparation verticale entre l'élément de fermeture supérieur (42) et l'élément intermédiaire (33) définit un espace annulaire qui diverge à partir de la périphérie extérieure de l'élément supérieur (42) vers l'ouverture centrale de l'élément intermédiaire (33), afin de créer un effet venturi, dû à l'écoulement d'air provoqué par le vent provenant d'une direction quelconque, ce qui réduit la pression de l'air dans l'espace situé au-dessus de l'ouverture centrale de l'élément intermédiaire (33) ; et
- b) la séparation verticale entre l'élément de fermeture inférieur (45) et l'élément intermédiaire (33) est supérieure à l'espacement entre l'élément supérieur (42) et l'élément intermédiaire (33) ; et l'ouverture de l'élément inférieur (45) est plus grande que celle de l'élément intermédiaire (33) ; de telle sorte qu'une ascendance naturelle n'est pas entravée alors que le risque d'éconlement descendant est réduit ;
- c) l'espacement vertical de l'élément supérieur (42) au-dessus de l'extrémité distale de la cheminée (1) ou conduit de fumée est inférieur au diamètre de la cheminée (1) ou conduit de fumée.
2. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle l'élément de fermeture supérieur (42) est généralement plat.
  3. Mitre de cheminée selon la revendication 1 ou 2, dans laquelle l'élément intermédiaire (33) comprend des rainures peu profondes globalement radiales (34).
  4. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle l'élément inférieur (45) comprend des rainures peu profondes globalement radiales.
  5. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle l'élément inférieur (45) est doté de moyens de fixation se présentant sous la forme de boulons-crochets (39) permettant de le fixer à la cheminée ou conduit de fumée.
  6. Mitre de cheminée selon les revendications 3 ou 4, dans laquelle les moyens de fixation sont logés dans les rainures peu profondes globalement radiales.
  7. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle un treillis de protection contre les oiseaux (47), s'étendant sur la circonférence, est monté entre les éléments intermédiaire et inférieur (33,45).
  8. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle le bombage des éléments intermédiaire et inférieur (33, 45) est le même.
  9. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle le bombage de l'élément intermédiaire (33) est inférieur à celui de l'élément inférieur (45).
  10. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle le diamètre de l'ouverture centrale de l'élément inférieur (45) est de l'ordre du, ou légèrement inférieur au, diamètre interne de la cheminée ou conduit de fumée.
  11. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle le diamètre de l'ouverture centrale de l'élément inférieur (45) est sensiblement le même que le diamètre de l'élément de fermeture supérieur (44), grâce à quoi l'élément de fermeture supérieur peut être formé par poinçonnage de l'ouverture de l'élément inférieur (45).
  12. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle le diamètre de l'élément supérieur (42) est de 200 mm.
  13. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle l'espacement vertical minimum entre l'élément supérieur (42) et l'élément intermédiaire (33) est de 16 mm ou moins.
  14. Mitre de cheminée selon l'une quelconque des revendications précédentes, dans laquelle les moyens de fixation (43, 44) comprennent des montants verticaux montés entre et reliant les éléments supérieur et intermédiaire (42, 43).

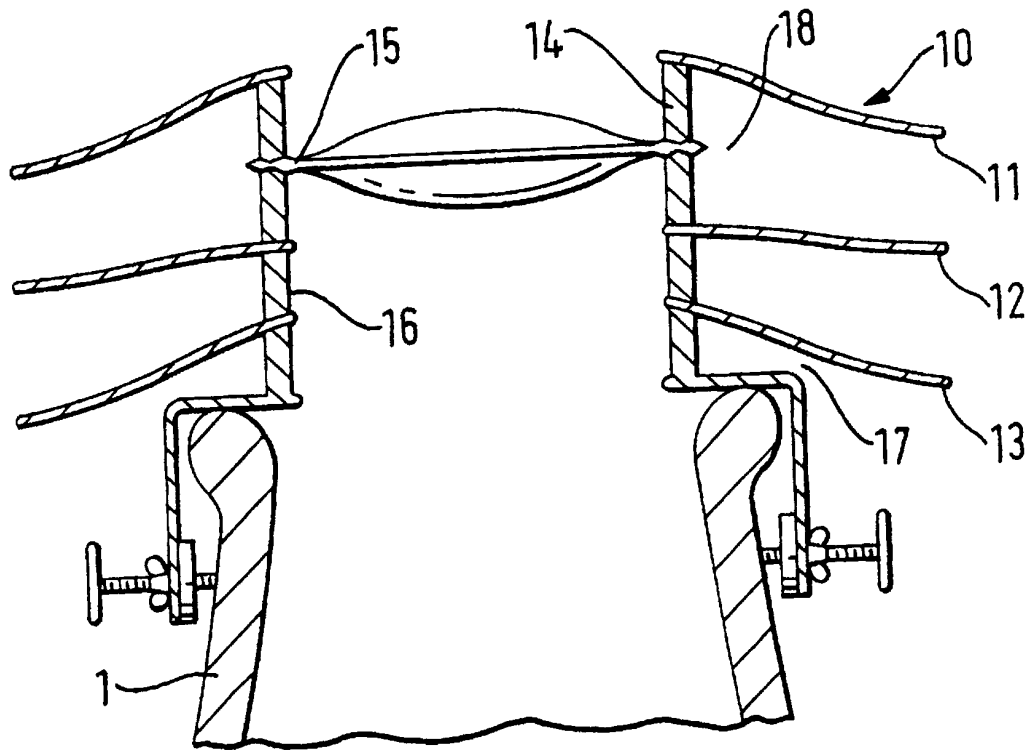


FIG. 1

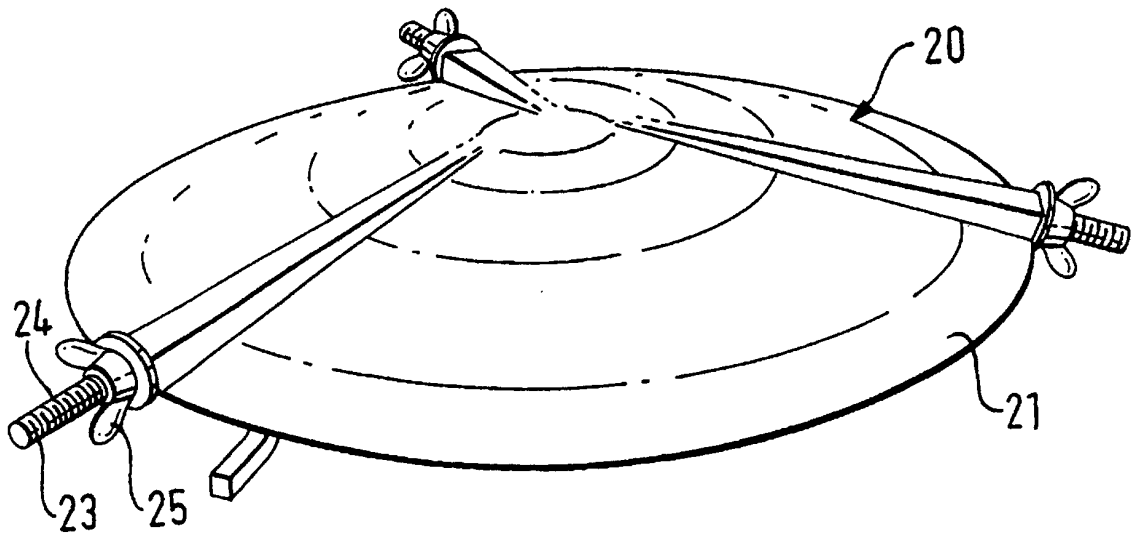


FIG. 2



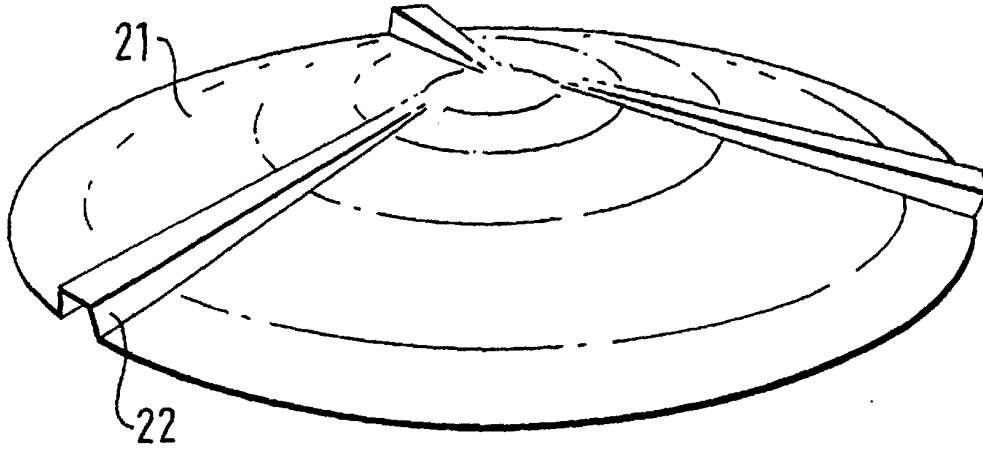


FIG. 3

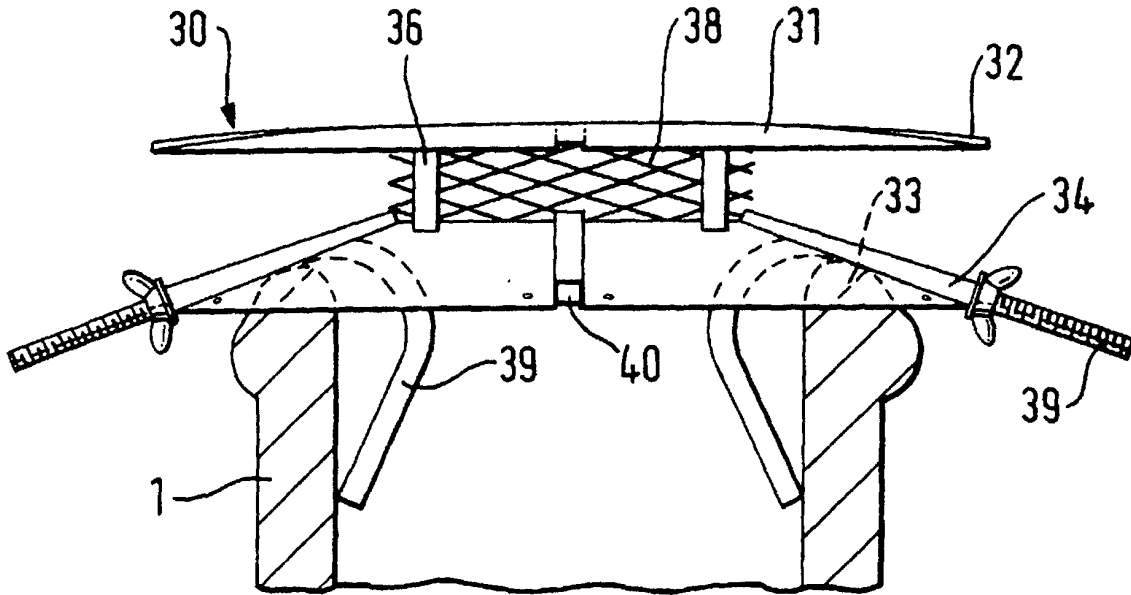


FIG. 4

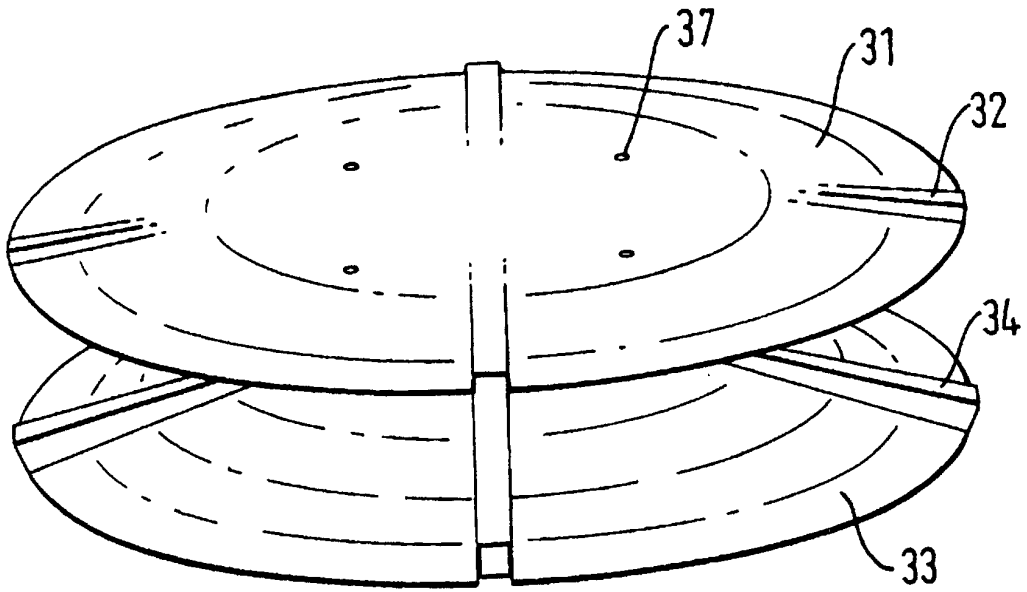


FIG. 5

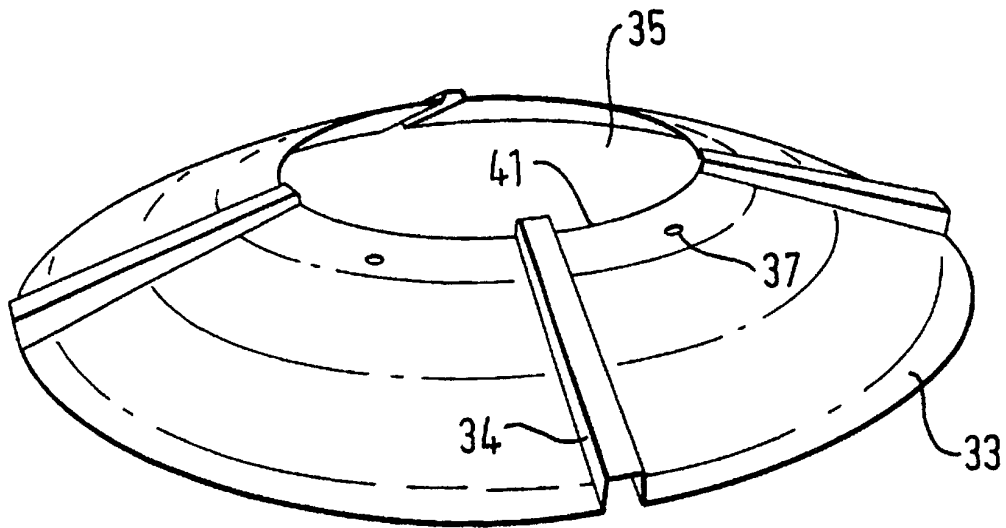
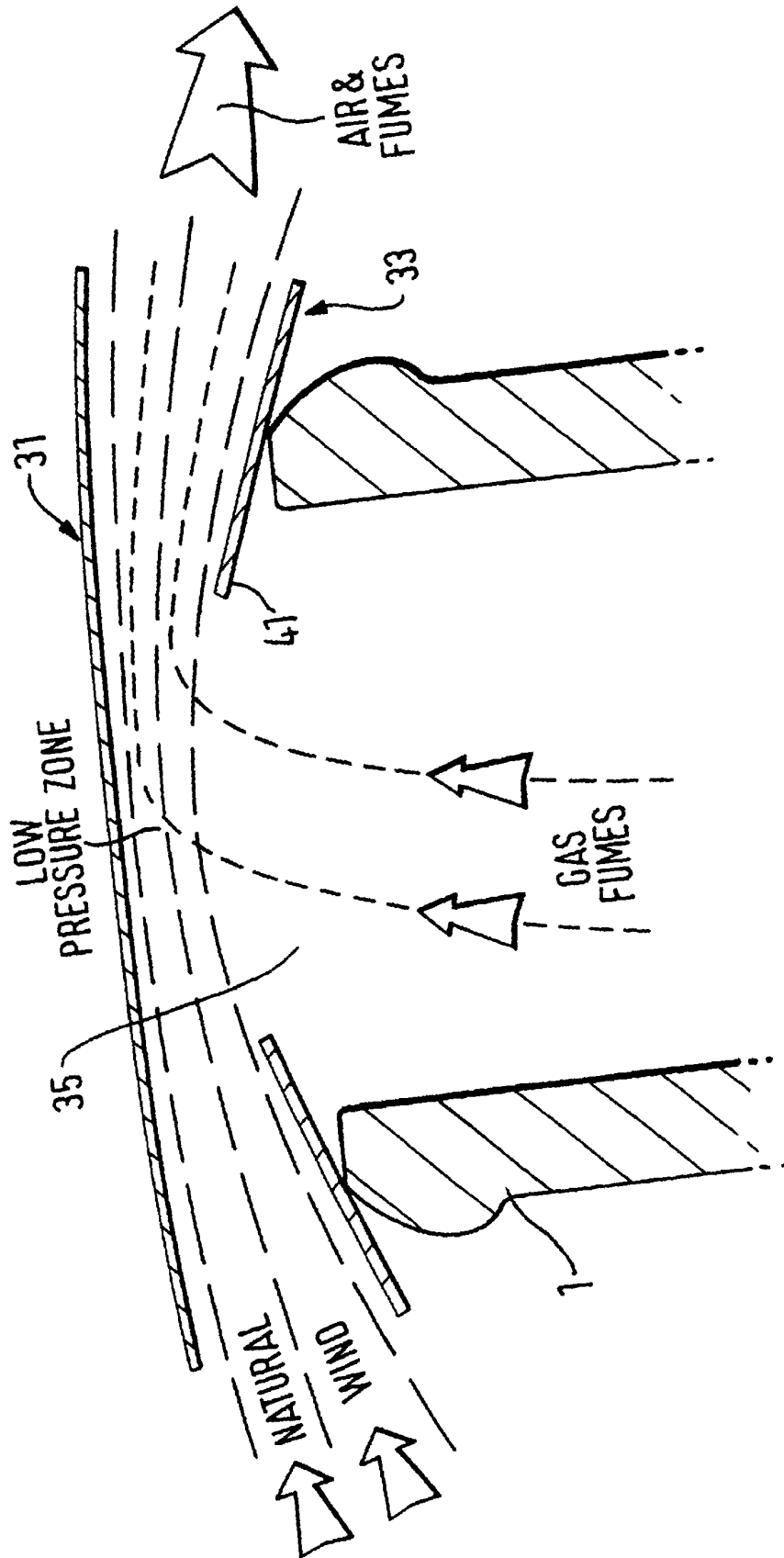


FIG. 6

FIG. 7



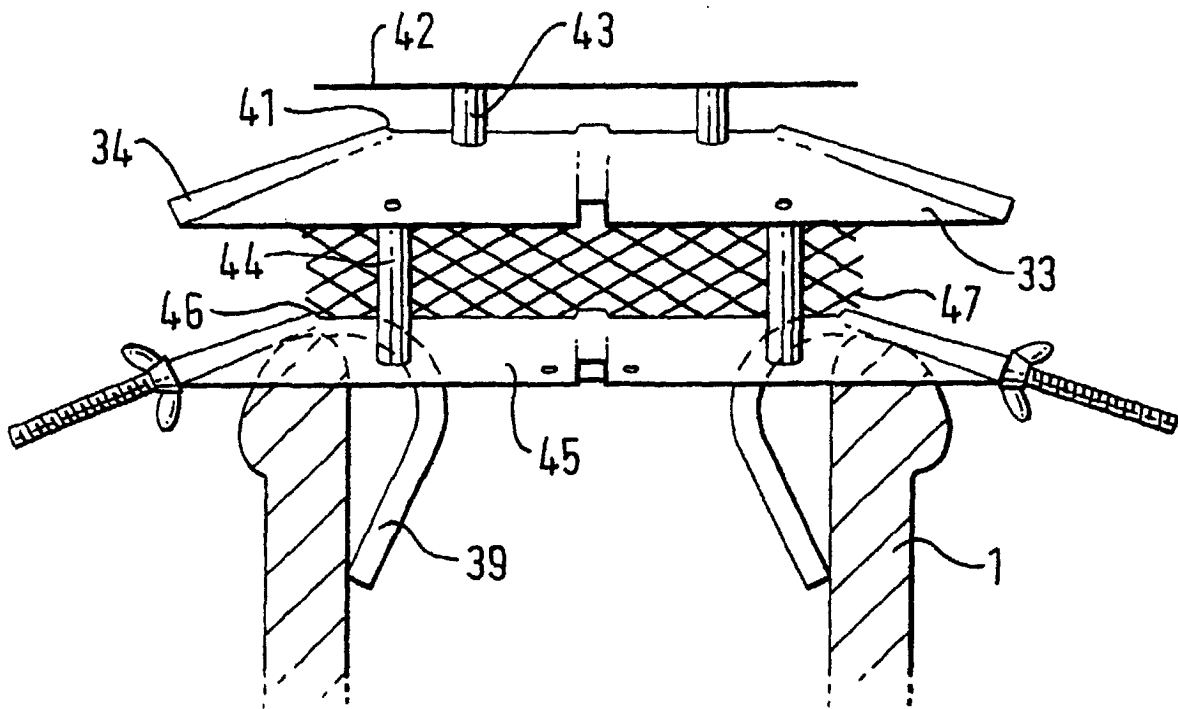


FIG: 8