

[72] Inventors **Edward J. Artis**
P. O. Box 7486, Boise, Idaho 83707;
Paul A. Artis, P. O. Box 7486, Boise, Idaho
83707
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Primary Examiner— William E. Wayner
Attorney— Clarence A. O'Brien and Harvey B. Jacobson

[54] **STATIONARY CHIMNEY VACUUM CAP**
 3 Claims, 7 Drawing Figs.

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 98/66
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 [50] Field of Search..... 98/81, 78,
 80, 60, 66, 58, 122

ABSTRACT: A cap for mounting on the upper end of a chimney or flue incorporating inner and outer generally spherical rows of slots so that when wind impinges on the cap, it creates a vacuum therein to enhance the exhausting and ventilating capabilities of the cap.

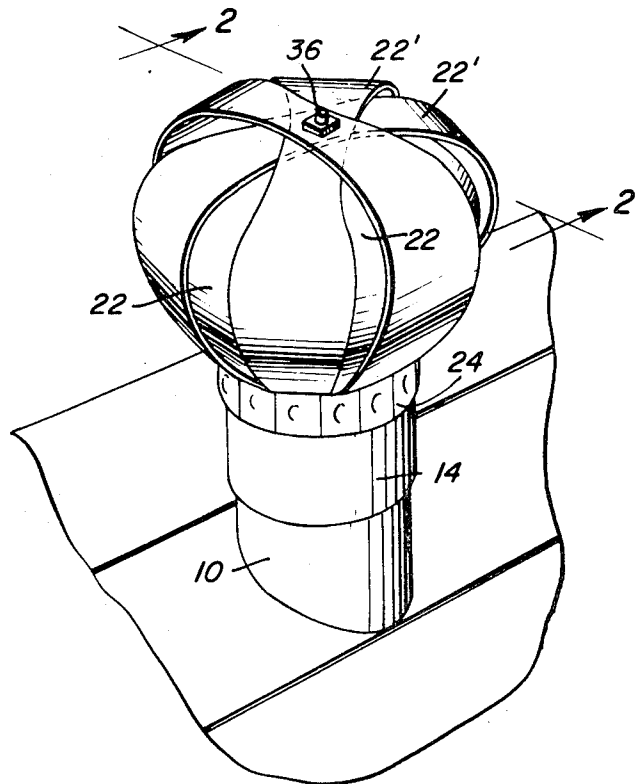


Fig. 1

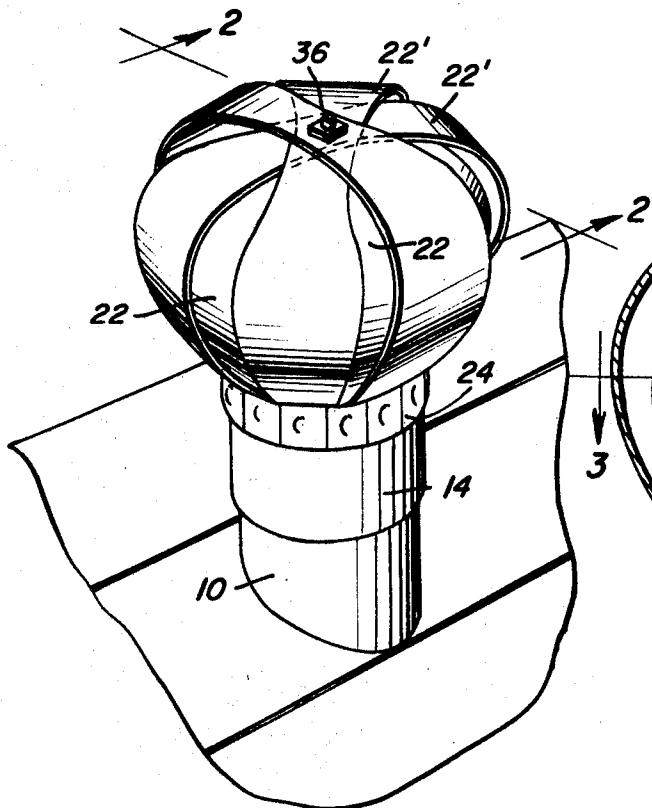


Fig. 2

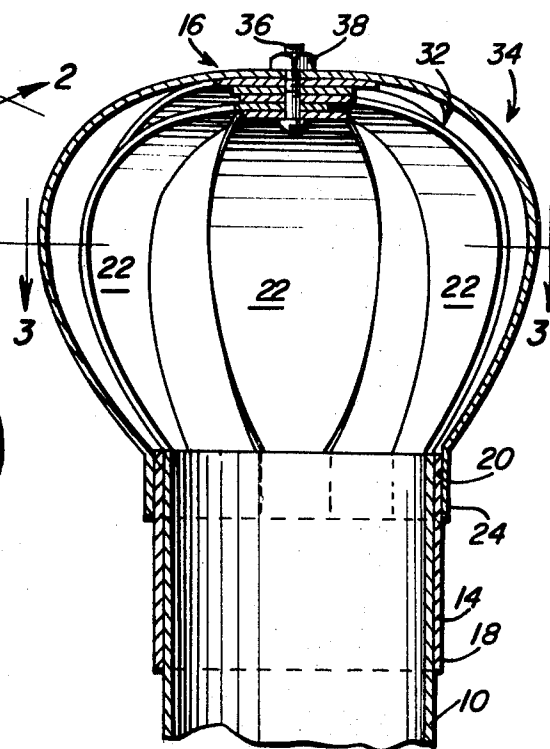
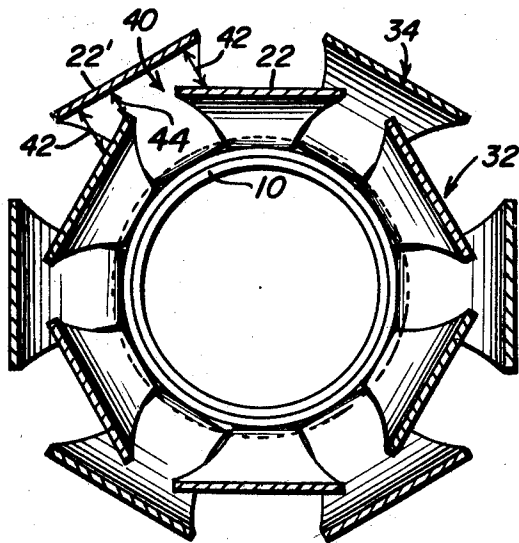


Fig. 3



Edward J. Artls
Paul A. Artls
INVENTORS

BY *Abnerce A. O'Brien*
and Harvey B. Jacobson
Attorneys

Fig. 4

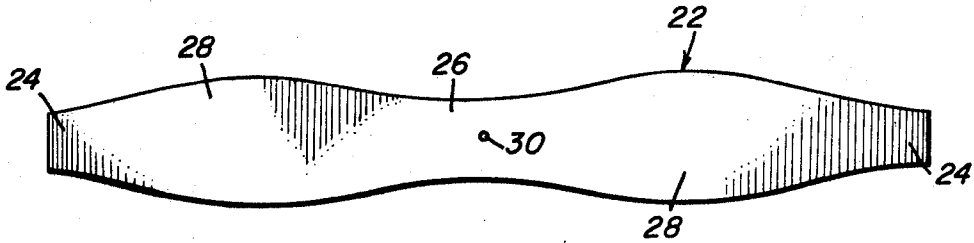


Fig. 5

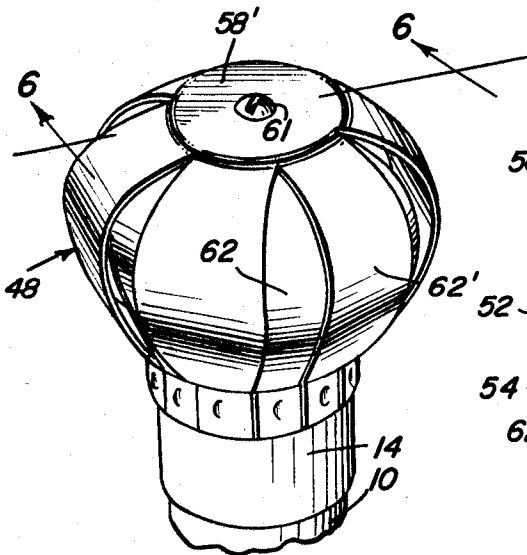


Fig. 6

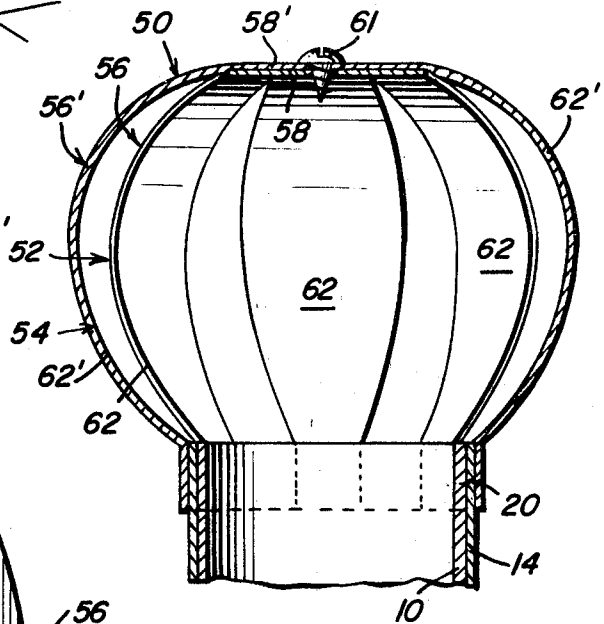
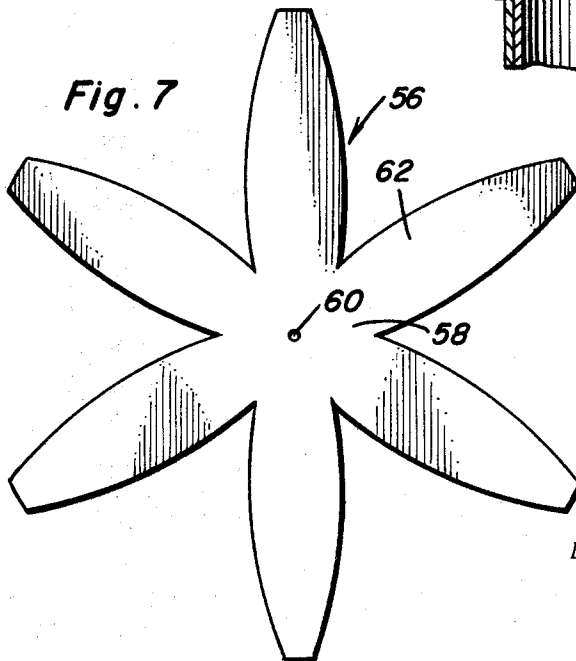


Fig. 7



Edward J. Artis
Paul A. Artis
INVENTORS

BY *Alfonse A. Riccio*
and Harvey B. Jacobson
Attorneys

STATIONARY CHIMNEY VACUUM CAP

Heretofore, the caps used on chimneys to exhaust and ventilate therefrom have been either of the rotary type or relatively complex stationary type. The rotary chimney cap requires a substantially balanced and carefully constructed cap to rotate on a bearing, which bearing must be kept relatively friction-free so that the slightest breeze will cause the cap to rotate to accomplish the exhaust function. This ventilator, while very efficient, creates the problems of frozen or squeaky bearings and friction between the relatively movable parts which cause the slowing down or complete stoppage of the rotation of the chimney cap thereby completely defeating the purpose thereof. The fixed chimney cap while overcoming some of the problems of the rotary chimney cap have heretofore been an extremely complex device of louvers and deflector slats in a casing thereby creating a very costly installation.

The present invention relates to a cap for a chimney or flue that is fixed thereto to provide exhaust or ventilating capabilities. The device is comprised of a series of flat or planar slats which are arranged in spherical overlapping relationship so that wind-driven rain cannot pass therethrough and will deflect wind in a venturi-like action creating a partial vacuum in the interior thereof to enhance the exhausting and ventilating capabilities of the cap. The slats of the chimney cap are arranged in two concentric sphere-like layers with the venturi effect occurring between the two layers of slats.

It is therefore an object of this invention to provide a cap for chimneys or flues that is fixed thereto to exhaust or ventilate the chimney or flue.

It is a further object of this invention to provide a cap for a chimney or flue that is simple but unique in construction and having no relatively movable parts therein.

It is a further object of this invention to provide a cap for exhausting or ventilating chimney and flues that has two partial spheres in concentric relationship formed out of flat planar slats.

It is a further object of this invention to provide a cap for exhausting or ventilating chimneys that does not allow air or water to pass therethrough but directs the air back out of the cap creating a partial vacuum within the interior of the cap to enhance the exhausting and ventilating capabilities of the cap.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the vacuum cap installed on a flue.

FIGURE 2 is a sectional view taken substantially along the line 2-2 of **FIGURE 1**.

FIGURE 3 is a sectional view taken substantially along the line 3-3 of **FIGURE 2**.

FIGURE 4 is a top plan view of one of the slats that comprises the basic construction unit of the cap.

FIGURE 5 is a perspective view of another embodiment of the cap.

FIGURE 6 is a sectional view taken substantially along the line 6-6 of **FIGURE 5**.

FIGURE 7 is a top plan view of the basic construction unit of the cap shown in **FIGURES 5** and **6**.

Referring now to the drawings numeral **10** indicates a chimney or flue while the numeral **12** generally indicates the vacuum cap of this invention. The cap structure **12** has a collar **14** to which is attached the substantially spherical shaped portion **16**.

The collar **14** of the cap is formed from a single flat sheet of metal or other appropriate material into a cylindrical portion or annular member that will fit telescopically over the chimney or flue **10**. While the collar **14** is shown in a round configuration to coincide with the round chimney or flue **10** it should be understood that the lower end of the collar **14** can be shaped to fit any configuration of chimney or flue. The col-

lar **14** has a lower or free end **18** thereof which is adapted and configured to fit over a chimney or flue, while the upper end **20** thereof has the spherical shaped cap portion **16** attached thereto.

The substantially spherical shaped portion **16** of the subject cap is constructed of a number of basic slat-like units **22**, as shown in **FIGURE 4**. The unit **22** is an elongated flat or planar slat or strap with narrow tabs **24** at either end thereof. The unit **22** has a mid-section **26** which is narrower than the adjoining enlarged portions **28** but need not be as narrow as the tabs **24**. The end tabs **24** of a width which is equal to one-twelfth of the circumference of the upper end **20** of the collar **14**. The slat-like units **22** are each provided with an opening **30** in the center thereof. The units are arranged in an inner, generally spherical row of slats **32** and an outer, concentric and generally spherical shaped row of slats **34**. The inner row of slats **32** comprises three of the basic slat-like units **22** in crossing relation with the openings **30** thereof receiving a bolt **36**. The tabs **24** of these slats are then bent inwardly toward one another to form the general spherical shape of the inner row **32**, with the tabs **24** being attached to the upper end **20** of the collar **14**. With the slats being thus aligned **120°** apart and attached to the collar the tabs **24** will each cover approximately **30°** of the circumference thereof and will have a space of approximately **30°** of the circumference between them. The three basic slat-like units **22** with their six depending enlarged portions **28** thus form the inner generally spherical row of slats **32**.

The outer row of slats **34** are composed of three slat-like units which are configured exactly like the units **22** but are slightly longer and are designated **22'**. The slight extra length of the slat-like unit **22'** results in a larger circumference for the spherical unit **34** thereby making the rows **32** and **34** concentric. With the six slats forming the inner and outer rows **32** and **34** respectively, installed on the bolt **36** a nut **38** is installed thereon to secure the slats thereon.

With the slats thus arranged in the concentric rows **32** and **34** the inner slats **22** will close off the gaps left between the outer slats **22'**, as shown in **FIGURE 3**, thereby preventing wind or rain from entering the cap and penetrating through to the opening in the chimney or flue **10**. As can be seen in **FIGURE 3** a venturi-like chamber **40** exists between each slat **22'** and the edges of the interior slats **22**. The venturi-like chamber **40** has an enlarged opening **42** existing between each edge of the slats **22'** and the overlapping inner adjacent edge of the slats **22**. The narrow or mid-portion **42** of the venturi exists between the middle of the slat **22'** and the adjacent edges of the inner slats **22**. Thus wind approaching from any direction will enter the gaps between the slats **22'** and impinge on the slats **22** to be directed through the venturi **40** creating a vacuum immediately inwardly of the inner row of slats **22** thereby enhancing the exhausting capabilities of the cap. As can be seen from the structure and its attachment in fixed relation to the chimney or flue, the efficiency thereof does not rely upon a spinning of the cap or high wind force. Further the overlapping of the slats **22** and **22'** prevents wind and rain from entering thereinto to create dangerous downdrafts or corrosion due to the entrance of water.

The embodiment shown in **FIGURES 5** through **7** is essentially the same as the embodiment of **FIGURES 1** through **4** with the exception that the slat-like units are incorporated in basic units to reduce the number of parts needed to make up the cap. The cap **48** has a collar **14** identical to the collar **14** on the previous embodiments which cap has a lower or free end **18** which is adapted to be received over and firmly engage a chimney or flue **10**. The upper end **20** of the collar **14** is adapted to receive and have fixed thereto the basic units of the substantially spherical-shaped portion **50** thereof. The substantially spherical-shaped portion **50** is comprised of an inner sphere **52** and an outer concentric sphere **54**. The inner sphere **52** is comprised of a basic flat unit **56** which has a round circular center panel **58** with a hole **60** through the center thereof for receiving a fastener **61**. Extending radially

outwardly from the circumference of the circular portion 58 are a plurality of slats 62 spaced 60° apart. The slats 62 are similar to the enlarged portions 28 and tab portions 24 of the slats of the previous embodiment. The outer concentric spherical portion 54 is composed of a slat unit identical to the slat unit 56 and designated 56', The slat unit 56' has slightly longer slats 62' to provide for a larger concentric sphere 54 thereby making the spheres 52 and 54 concentric. The two slat units 56 and 56' are attached with the slats 62 and 62' in overlapping relationship, with their center lines spaced 30° apart, so as to present the same cross-section as shown in FIGURE 3. Thus, the resultant structure is identical in configuration and function as the embodiment of FIGURES 1 through 4 and can be conveniently constructed of only three basic units, which are the two basic slat units 56 and 56' and the collar 14.

The embodiment shown in FIGURES 1 through 4 can be comprised of any number of basic slat-like units 22 and 22' depending upon the circumference of the flue or chimney 10 to be accommodated. Thus, it would be possible to have four or even five of the basic slat units form the inner and outer spherical rows of slats to accommodate an extremely large circumference chimney or flue. The embodiment shown in FIGURES 5 through 7 lends itself to pre-assembly in standard sizes in relatively low cost production due to the limited number of parts required to assemble the unit. The units being each constructed from flat sheet stock do not require any precise bending of parts to be used in the construction. Therefore, only average skill is required in the assembling and construction of the cap and it can be sold as a kit to be assembled by the purchaser. Further, since the parts do not have to retain their shape in any precise bends they can be constructed out of any suitable sheet material such as plastic in addition to the common and well-known versions made out of sheet metal.

The ventilating and exhausting cap provided herein for chimneys is extremely simple in construction but a highly efficient unit that is extremely low in cost to produce and requires no routine maintenance and utilizes wind from any direction to enhance its evacuating properties. Further, even if the ventilator is used near a large perpendicular extending wall and wind impinging thereon strikes the ventilator in a direction opposite from the prevailing winds, this will not defeat the purpose of the ventilator but in fact will further add to and reinforce the evacuating capabilities of the cap.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is

not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

We claim:

1. A cap for a chimney or flue, comprising: an annular member, an inner, generally spherical row of spaced slats, an outer, generally spherical row of spaced slats in spaced concentric relation to said inner row, the slats in the inner row being aligned with the spaces between the slats in the outer row throughout the length of the spaces and the slats in the outer row being aligned with the spaces between the slats in the inner row throughout the length of the spaces, said slats having end portions anchored to said annular member, the inner and outer rows of slats being connected in overlying relation to each other remote from the annular member, each of said slats being flat from side edge to side edge thereof, the end portions of said slats anchored to said annular member and the portions of said slats connected in overlying relation being narrower than the portions of said slats intermediate the end portions and the overlying portions to assure overlapping of the slats in the outer row with the edges of the slats in the inner row, each row of said slats being constructed of sheet material to enable easy formation of the slats and assembly of the slats by bending longitudinally straight slats into the generally spherical rows of slats thus defining a generally spherical cap in which the annular member is adapted to telescope in relation to a chimney or flue for mounting thereon and the overlying portions of the slats are remote from the annular member and generally forms a cap above the annular member.

2. The device of Claim 1 wherein each row of slats includes a plurality of elongated, relatively narrow straps crossing each other at the center with the end portions attached to said annular member, means securing the crossed centers of the straps together for retaining the rows of slats assembled, the slats in the outer row being longer than the slats in the inner row thereby spacing the rows apart.

3. The device as defined in Claim 1 wherein each row of slats includes a central panel having a plurality of straps of equal length radiating therefrom with the free ends attached to said annular member, means securing the central panels together in overlying relation, the straps in the outer row being longer than the straps in the inner row thereby spacing the rows apart.

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