

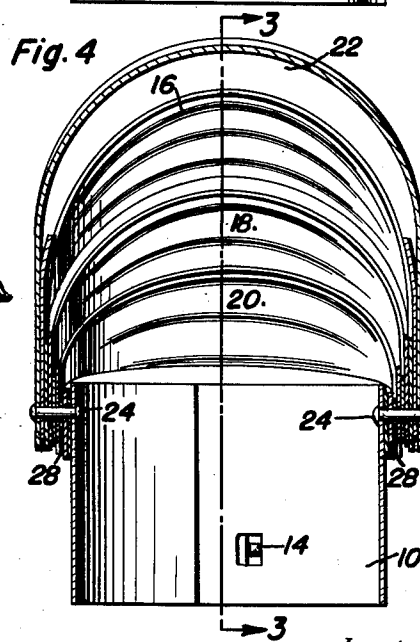
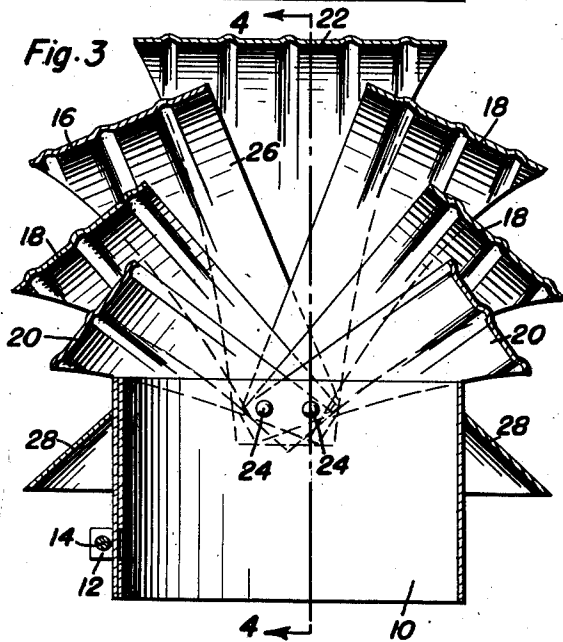
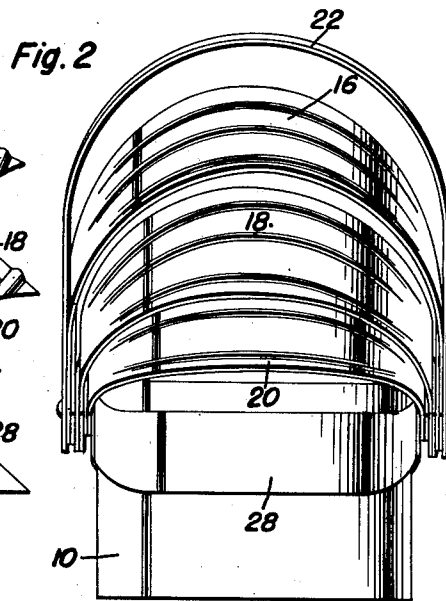
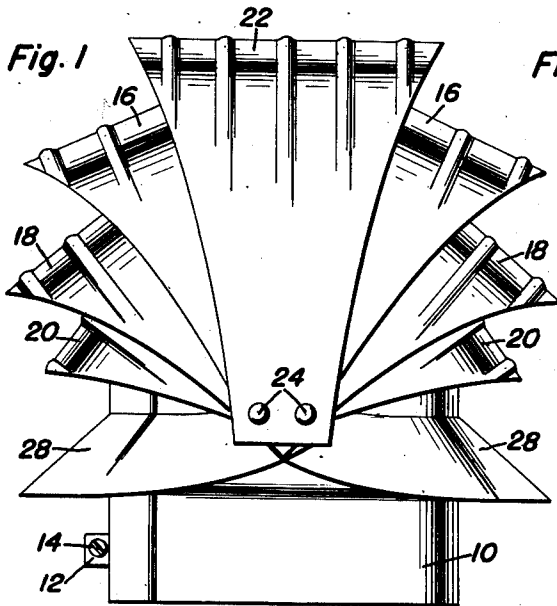
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2,676,529

VACUUM CAP FOR CHIMNEYS

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# UNITED STATES PATENT OFFICE

2,676,529

## VACUUM CAP FOR CHIMNEYS

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1 Claim. (Cl. 98-66)

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This invention relates to new and useful improvements in chimney caps and the present invention is to provide a cap that will increase chimney draft considerably and which includes a frusto-conical member that is mounted about a tubular body having sets of U-shaped members mounted thereon to prevent air from bouncing against a roof to pass through the sets of members.

Another object of the present invention is to provide an addition to my Patent No. 2,191,948, issued February 27, 1940, that will permit the chimney cap to be installed right down on the roof line and definitely eliminate a back draft caused by wind action on the roof and at the same time keep a fairly balanced draft.

A further object of the present invention is to provide a vacuum cap for chimneys so constructed as to eliminate the necessity of providing extensions for chimney pipes and the additional cost of material and labor for installing an extension on a chimney pipe.

A still further aim of the present invention is to provide a vacuum cap for chimneys that is simple and practical in use, inexpensive to manufacture and install, efficient and reliable in operation, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an elevational view of the present chimney cap;

Figure 2 is a side view of Figure 1;

Figure 3 is a vertical sectional view taken substantially on the plane of section line 3-3 of Figure 4; and,

Figure 4 is a vertical sectional view taken substantially on the plane of section line 4-4 of Figure 3.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a cylindrical or tubular body having a longitudinal slit extending throughout its length with the edges of the slit overlapping each other. Ears 12 are struck from the cylinder 10 adjacent the overlapping edges with the ear from the innermost of the edges extending through and slidably received in the opening provided during the forming of the other ear. The ears are adjustably

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connected by a fastener 14 whereby the cylinder may be clamped about a chimney pipe (not shown).

Pairs of substantially U-shaped members or gores are mounted on the cylinder 10 and include an upper pair of U-shaped members 16, an intermediate pair of U-shaped members 18 and a lower pair of U-shaped members 20. A central U-shaped member 22 is also mounted on the cylinder 10. Each end of the members 16, 18, 20 and 22 has two holes through which rivets or bolts 24 pass and the rivets 24 also extend through the walls of the cylinder 10 to retain the ends of the U-shaped members securely to diametrically opposite sides of the cylinder and against pivotal movement.

One of the members 20 is first put in place on the rivets 24, then the other member 20 is put in place. Then one of the members 18 is put in place and then the opposite member 18. Next, one of the members 16 is put in place and then the opposite member 16 is put in place, and finally the member 22 is put in place with the ends of the members 16, 18, 20 and 22 secured together and to the cylinder.

Each of the members 16, 18 and 20 is formed with a straight upper or inner edge 26 but its lower edge slopes outwardly from its ends to its transverse center and the members 20, 18 and 16 are made of progressively increased lengths to provide a space between them. The member 22 is of a greater length than the members 16 so that it is spaced from the inner portions of the two members 16 with the members 16 extending outwardly beyond the side edges of the member 22 and the members 20 extending outwardly beyond the side edges of the members 18.

As all of the members 16, 18, 20 and 22 are spaced apart as shown in Figures 1 and 3, the atmospheric air can pass between the members and this passage of air will create a vacuum or suction in the cylinder 10 and the chimney or pipe to which the cylinder is connected and thus increase the draft of the chimney or pipe. The member 22 tapers from its transverse center toward its end and the side edges of the member 22 will curve slightly as shown and the outer edges of the members 16, 18 and 20 are also curved to provide concave edges as shown in Figures 1 and 3.

The spaces between the U-shaped members are segments of an oval and the width of member 20 at its center is one-third the diameter of cylinder 10. The outer edges of the members being curved, will permit the air coming out of the

device to pass over very little material to reduce resistance. The members 20 are so set that the space between the members 20 and the cylinder is at its widest point equal to one-fifth the diameter of the cylinder. The other members are set the same distance from the preceding one to make the combined area of the spaces between the members 45 per cent greater than the area of the cylinder so that the air in the chimney or flue can pass through the spaces at a very low velocity when there is no wind movement.

The greatest width of members 20 is one-third larger than that of members 18 and the greatest width of members 16 is one-third larger than that of members 18 to make the cap water-tight and by holding this difference in widths when the members are set in place their inside edges all point in such a manner that the air coming up the chimney is directly deflected out the opposite side. This prevents the air from striking against the top member and encountering resistance which would be the case if only three members were used. The top member 22 has its greatest width as wide as the diameter of the pipe or cylinder 10 and it is so placed that the free area between it and the members 16 is equal to that between the members 18 and 20.

The aforescribed device is specifically set forth in my Patent No. 2,191,948, issued February 27, 1940, however, such a device requires an extension for the chimney pipe or flue for its efficient operation. Therefore, the present invention eliminates the necessity of having to employ an extension and permits the cap to be mounted close to the roof line to eliminate a back draft caused by wind action on the roof and at the same time keeps a fairly balanced draft.

To accomplish the desired results, there is provided two additional gores or U-shaped members 28 which control the direction of the air striking the roof when the cap is located within 18" of the roof line. This action of the air is commonly known as a "wind bounce" and is very detrimental to the operation of all back draft eliminators when located near the roof line. The members 28 embrace diametrically opposite sides of the cylinder 10 below the members 20 and their ends receive the rivets 24.

The upper edges of the members 28 are straight whereas their lower edges are concave from their transverse centers to their ends. The upper portions of the gores 28 are overlapped by the lower portions of the members 20 to prevent the movement of air formed by "wind bounce" or any unnatural air movement from entering the cap through the lower gores 20 and hindering the operation of the cap.

By preventing the air from entering the cap below the gores 28 and directing it upward, the Venturi principle of the cap is not destroyed but

the efficiency of the cap increased. The addition of the gores 28 not only eliminates the "wind bounce" affecting the operation of the cap but also increases the efficiency of the other upper gores.

The gores 28 form a substantially frusto-conical element that embraces the cylinder with the minor end of the element contacting the outer periphery of the cylinder. Obviously, the gores 28 may be secured to the cap during assembly thereof or the gores 28 mounted on the cylinder after the other gores have been secured to the cylinder.

Having described the invention, what is claimed as new is:

A chimney cap comprising a vertically disposed tubular body having an open upper end, sets of U-shaped members secured to diametrically opposite sides of the body, said sets of members including a lower set, an intermediate set, and an upper set, said intermediate set of members being disposed closer together than said lower set of members and said upper set of members being disposed closer together than said intermediate set of members, said intermediate set of members overlapping the lower set of members and said upper set of members overlapping the intermediate set of members, a vertically disposed central U-shaped member having its ends secured to the same sides of said body as the ends of said sets of members and overlapping the upper set of members, a pair of U-shaped members surrounding the outer periphery of the body and spaced vertically below the lower set of members, said pair of U-shaped members having their ends secured to the same side of said body as the ends of said sets of members, said pair of U-shaped members having an upper edge engaging the periphery of the body and a lower edge spaced from the body thereby forming a downwardly and outwardly inclined surface, and a pair of spaced parallel fasteners at diametrically opposite sides of the body for securing each end of each member to said body to retain the sets of members in fixed spaced relation to each other.

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