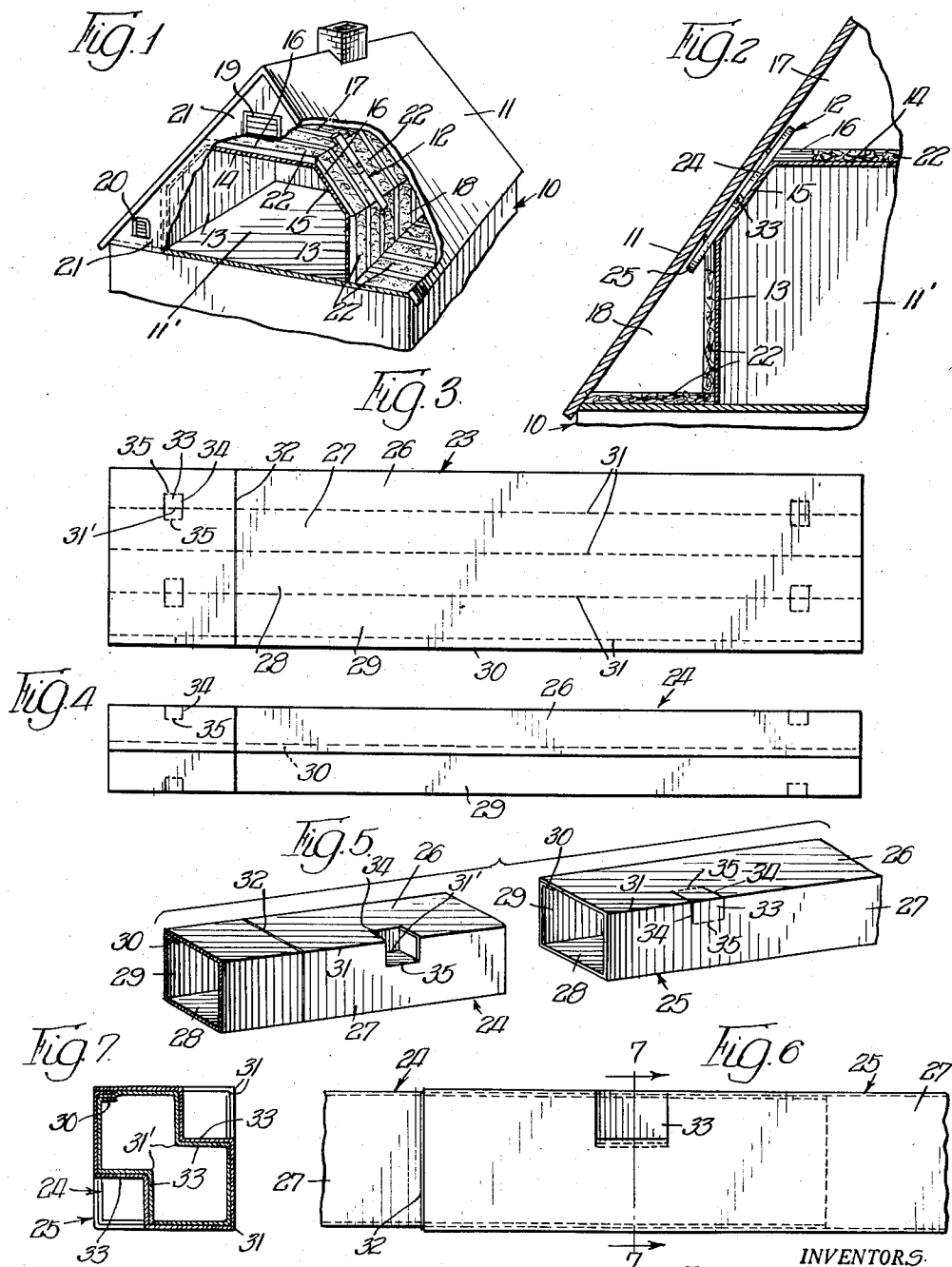


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INSULATION VENTILATOR TUBE

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INSULATION VENTILATOR TUBE

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The present invention relates to an improvement for use in the ventilation of insulated buildings. It takes the form of a composite paperboard tube having component tubular parts telescoped onto one another and interlocked in a manner to build up a tubular ventilating unit of a desired length. This unit can be quickly and easily assembled and placed in use in the construction of an insulated room of a dwelling or the like, or it can be readily installed in an existing structure as the work of insulating the same proceeds.

It is customary, in the insulation of building structures to apply insulating material in the spaces between wall studs and ceiling joists, either in the form of prefabricated bats or by blowing particulate or comminuted insulating material into these spaces under pneumatic pressure. Instances often arise in which it is desirable to provide for the flow of ventilating air between certain spaces which are separated from one another by such insulated construction, and a typical example, of which there are many others of related character, is the case in which a separate additional room is constructed within the confines of a roof gable. The triangular peak of the gable is ordinarily truncated interiorly by the ceiling of such a room, while an intermediate, upwardly inclined slope portion intervenes between the ceiling and the upright side walls of the room. The studding of this sloped portion is flush with the inclined inner side of the gable wall or roof, the space between the studs being filled with the insulating material in question.

The invention is addressed to the problem of insuring proper circulation of air between triangular spaces which are thus outwardly defined above and to the sides of such a room, which affords a typical example of the invention's general objective. There are of course many other installations in which the same end of providing for adequate insuring of equivalent or corresponding ventilation for any similarly cut off space or spaces is served by the improved insulation ventilator tube.

The tube is built up of two generally similar elements, each fabricated from a simple elongated rectangular blank of an appropriate gauge and quality of paperboard, preferably treated to render the same fireproof or fire-resistant.

It is subdivided into wall panels by parallel longitudinally extending creasing, and is completed by folding the same on these creases into a flat tubular form and securing opposed edges to one another, as by a suitable adhesive. The individual tubular elements are shipped, stored and sold in this flat, collapsed form. They are of two sizes, in reference to their cross sectional area when squared up to a rectangular, box-like outline, the smaller sized tube element being telescopically interfitted snugly within an end of the larger when the unit is used.

Each tube element is provided, in inwardly spaced relation to the opposite ends thereof, with a pair of diagonally opposed, integral, medially creased snap straps. These are hinged at their ends to adjacent tube walls and are reversely flexed diagonally inward from opposite cor-

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ners of the squared up element into inwardly squared position themselves, in which they automatically brace the tube in its rectangular, box-like sectional shape.

With the pairs of snap straps of the innermost tube thus manipulated, it is partially telescoped within an end of the larger tube, bringing the snap straps of the respective tubes into longitudinal register, as by means of an appropriate register reference mark on one thereof. The registered snap straps of the outer, larger tube are then flexed inwardly, bringing the same in nested relation to those of the innermost tube. The engaged straps thus provide a strong, displacement-resisting interlock of the two tubes, one within the other, the edges of those of the outer tube engaging the edges of the openings in the inner tube which are left when its straps are deflected in.

A ventilating tube structure of any desired length is thus built up by alternately telescoping and interlocking smaller and larger sized components. This unit may then be secured in a desired position by staples or equivalent means, as between the studs of the inclined slope of an attic room, in the illustrative installation described above. The remainder of the space between the studs is filled with insulating material. Communication between the separated spaces above and outwardly of the slope is established and proper ventilation insured, using as many of the assembled tube units as are necessary to the purpose. The exceedingly inexpensive ventilating unit thus serves the identical purpose, with equal effectiveness, as other types of ventilating units of far greater cost.

The foregoing statements are indicative in a general way of the nature of the invention. Other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and use of the device.

A single embodiment of the invention is presented herein for purpose of illustration. It will be appreciated that the invention may be incorporated in other modified forms coming equally within the scope of the appended claims.

In the drawings:

Fig. 1 is a fragmentary perspective view, partially broken away, illustrating the application of the improved tube of the invention in the ventilation of the gable of a house in which an additional room has been built;

Fig. 2 is a fragmentary view in slightly larger scale further depicting the mode of use of the ventilator tube in an installation such as Fig. 1;

Fig. 3 is a plan view of a paperboard blank from which one of the component elements of the tube unit is constructed;

Fig. 4 is a plan view of that element in a completed but flat, knocked-down condition;

Fig. 5 is an exploded, fragmentary view illustrating the manipulation of two component, squared up mating tubes in assembling the same;

Fig. 6 is a fragmentary view in enlarged scale illustrating the tube assembly in its erected and locked condition; and

Fig. 7 is a view in transverse vertical section along line 7—7 of Fig. 6.

Figs. 1 and 2 of the drawings illustrate the above described typical installation of the improved insulation ventilator tube. There are many other wall and ceiling installations to which the unit is equally well adapted. Fig. 1 depicts the top of a gabled dwelling 10 in the attic roof 11 of which an extra room 11' has been constructed by the addition of flooring, upright side walls 13, a ceiling 14, and connecting slope walls 15 whose studding 16 is flush with the sides of gable roof 11.

A series of ventilator tubes in accordance with the invention, generally designated 12, are arranged between studs 16, in an appropriate number depending upon the

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longitudinal dimension of slope 15, and they communicate and ventilate the respective triangular spaces 17, 18 above the room ceiling 14 and to either side of room walls 13. Air flow is established in a well known fashion by appropriate louvered openings 19, 20 in a front gable wall 21. Upon placement of the insulating tubes 12 and securement of them to the slope 15, as by the use of a stapler, the remaining space between the studding is filled with the insulation material, designated 22, to complete the installation. This may be in the form of prefabricated bats or may be a particulate, flocculent or comminuted material blown into place.

The improved tube unit is of composite, plural-part character, and each component thereof is made from a simple paperboard blank of elongated rectangular outline, such as is shown in Fig. 3 and designated generally by the reference numeral 23. Two almost identical tube elements, shown in Figs. 5, 6 and 7 and designated 24, 25, respectively, go into the making of each unit, the main difference between these two elements residing in the fact that one, designated 24, is slightly smaller in its over-all cross sectional area than the other. It is thus capable of being snugly interfitted with element 25 by sliding it into the end of the latter.

Accordingly, a blank 23 for element 24 will be a trifle smaller in its width than a blank from which the larger element 25 is constructed.

Blank 23 is subdivided into four longitudinal panel zones 26, 27, 28 and 29, plus a glue lap 30, by means of creases 31 extending longitudinally throughout the length thereof, about which creases the blank is to be folded. Furthermore, the blank 23 from which the smaller tube element 24 is constructed is provided with a suitable registry mark, such as a transversely extending crease 32 adjacent one end thereof. This mark serves to facilitate the ultimate assembly of the elements 24, 25 into a finished ventilator tube. It is desirable that the blank be treated appropriately to render it fireproof or fire-resistant in view of its intended use.

Blank 23 is completed by the provision of a pair of transverse interlocking snap straps 33 adjacent each of the ends thereof. Straps 33 are positioned across non-successive internal creases 31, extending equidistantly on opposite sides of the first and third creases as shown. Each strap is defined by a pair of short parallel transverse slits 34 and short parallel longitudinal creases 35 connecting corresponding ends of slits 34. The straps are medially subdivided by crease portions 31' of crease 31, so that the strap is adapted to flex relative to the panels bearing the same, as well as upon itself.

Blank 23 is completed into a four-panelled, flat, collapsed tube, designated 24 in Fig. 4, by folding the same upon the four creases 31 and adhering glue lap 30 to the panel 26, which it then underlies.

Quantities of the respective smaller and larger tubes 24, 25 are stacked and may be banded in this flat condition for storage and sale. In assembling the two tubes 24, 25 each is manipulated to erected rectangular cross sectional outline by applying pressure to the opposite side edges thereof. When this outline is reached, the snap straps 33 of smaller tube 24 are deflected inwardly, reversing the same to an inwardly angled position (Fig. 5), which braces the tube in its final shape.

With larger tube 25 correspondingly erected to a box-like, but as yet unlocked, outline, as illustrated in Fig. 5, it is then telescoped over the registry marked end of tube 24, sliding its forward edge onto tube 24 until it coincides with register crease 32. Crease 32 is spaced inwardly from the snap straps 33 of tube 24 the same distance as the snap straps of tube 25 are located from its end; accordingly, when that end reaches crease 32 snap straps

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33 of the larger tube coincide in the longitudinal sense with the straps of the smaller. The latter now are also flexed inwardly into a nested interfit with the registered inner straps in the manner illustrated in Figs. 6 and 7.

Of course, if desired the two sets of straps may be deflected inwardly simultaneously, register mark 32 insuring proper alignment thereof. Alternate assembly of smaller and larger elements in the way described enables a tube unit of any necessary length to be built up.

The composite tubular structure thus produced has multiple bracing in its erected condition and the component tubes are very effectively interlocked against longitudinal displacement. Should it be desired to dismantle a locked tube this is readily accomplished by simply collapsing the same to flat condition, reversing the direction of collapse in reference to the creases 31. This causes snaps 33 to spring automatically back into a position in which they lie coplanar with the respective panels 26—29 of the tube.

We claim:

1. A tubular construction comprising a pair of generally similar paperboard tubes creased longitudinally for flexure from flat collapsed condition to erected, box-like cross sectional outline, each of said tubes being provided with an integral strap partially separated therefrom and hingedly connected at its ends thereto, said strap extending across a longitudinal crease of the tube and being flexible inwardly of the tube outline into a reversible folded position bracing said tube, the tubes being telescopically interfitted, one within the other, with their respective straps in longitudinal register and in inwardly reversely folded and internested relation to one another.

2. A tubular construction comprising a pair of elongated, generally similar paperboard tubes creased longitudinally for flexure from flat collapsed condition to erected, box-like, generally rectangular cross sectional outline, each of said tubes being provided with a pair of integral straps partially separated therefrom and extending transversely across diametrically opposed longitudinal crease corners thereof, which straps are flexible inwardly of the tube outline into a reversely folded position bracing said tube in said rectangular outline, the tubes being telescopically interfitted, one within the other, with the straps of the respective tubes adjacent the telescoped ends in longitudinal alignment and in inwardly reversely folded and internested longitudinally interlocking position.

3. A tubular construction comprising a pair of elongated, generally similar paperboard tubes each of rectangular cross sectional outline, each of said tubes being provided adjacent each end thereof with a transversely disposed strap integrally hinged thereto and partially separated therefrom which is flexible inwardly of the tube outline, the tubes being telescopically interfitted, one within the other, with the straps adjacent the telescoped ends of the respective tubes in longitudinal register and in inwardly internested, interlocking position, the telescopically received end of one of said tubes being provided with a registry mark in inwardly spaced relation with its strap and in line with the telescoping end margin of the other of said tubes.

References Cited in the file of this patent

UNITED STATES PATENTS

470,514	Simpson	Mar. 8, 1892
1,158,871	Tomlin	Nov. 2, 1915
1,493,447	Heppes	May 6, 1924
2,192,914	Ice	Mar. 12, 1940
2,259,737	Cunningham	Oct. 21, 1941
2,378,272	Whitaker	June 12, 1945
2,772,609	Bray et al.	Dec. 4, 1956