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(54) **ENERGY INSULATION PILLOWS AND SYSTEM FOR INSTALLATION**

(76) Inventor: **Robert J. Alderman**, Canyon Lake, TX (US)

Correspondence Address:
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
100 GALLERIA PARKWAY, NW
STE 1750
ATLANTA, GA 30339-5948 (US)

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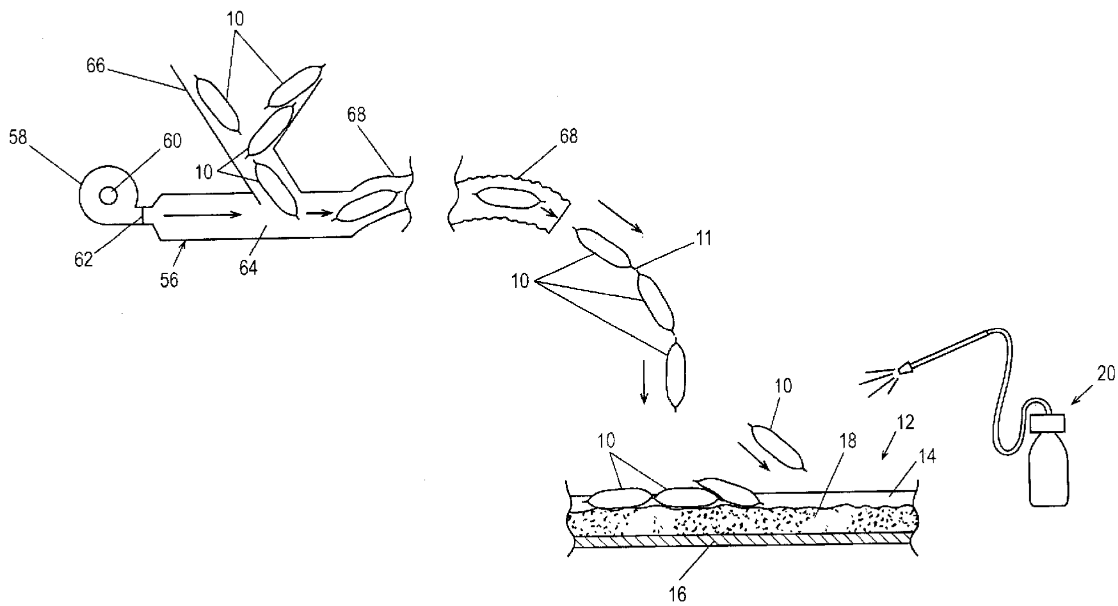
(57) **ABSTRACT**

Heat insulating air bags (**10**) are formed with heat reflective interior surfaces (**13**) and the bags are filled with gas. In a preferred embodiment, the bags are formed at a forming site adjacent a dwelling, in a continuous manner, and are fed to an air delivery system (**56**) that blows the bags into the building structure where they are directed to an insulation receiving site, such as the floor of an attic.



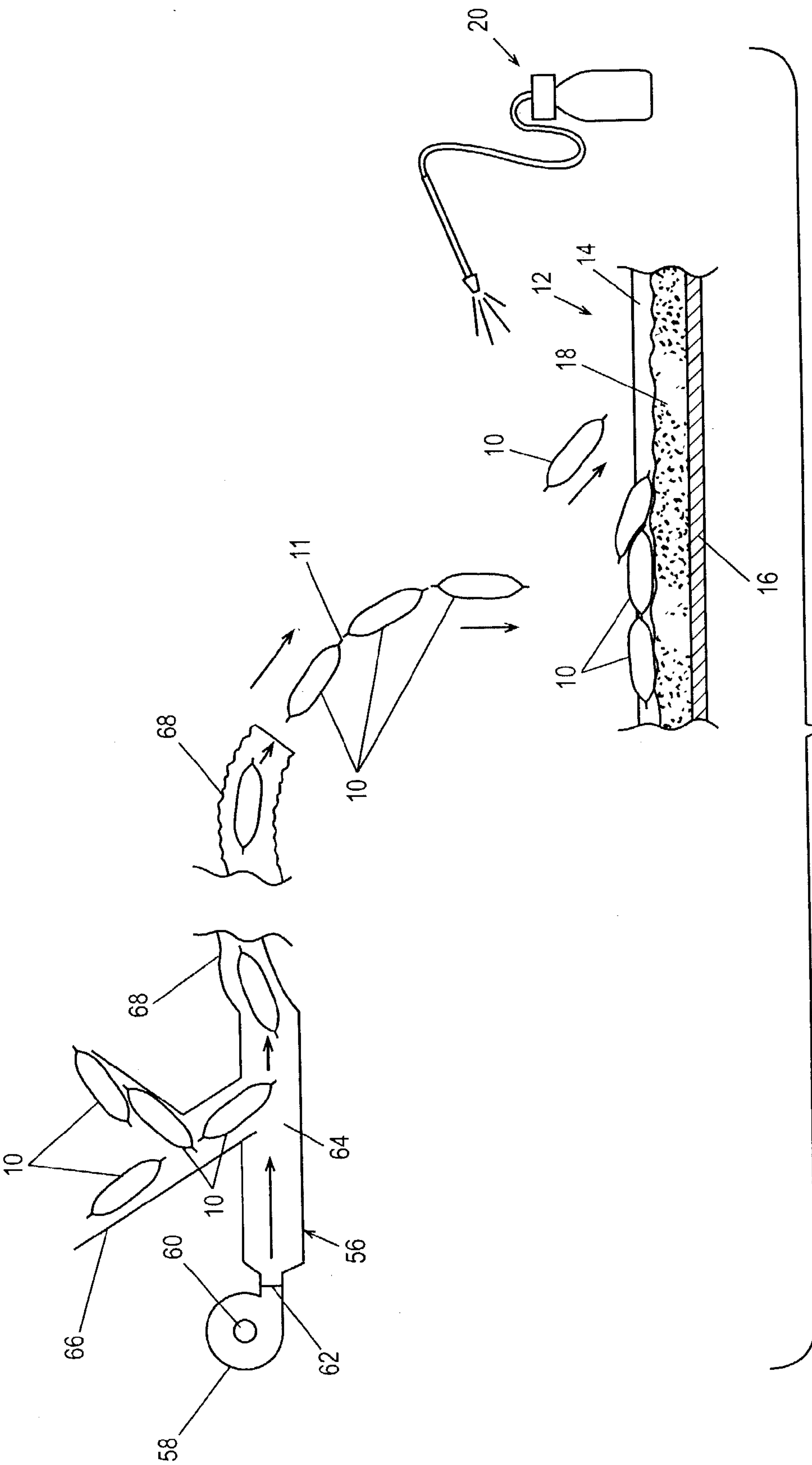


Fig. 1

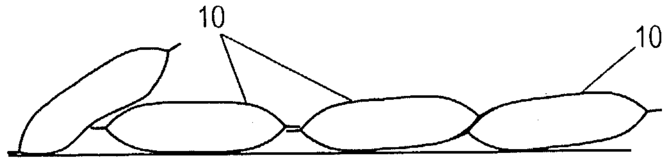


Fig. 2

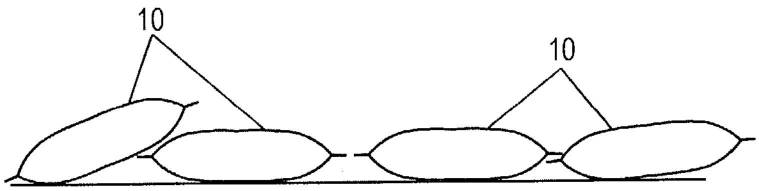


Fig. 3

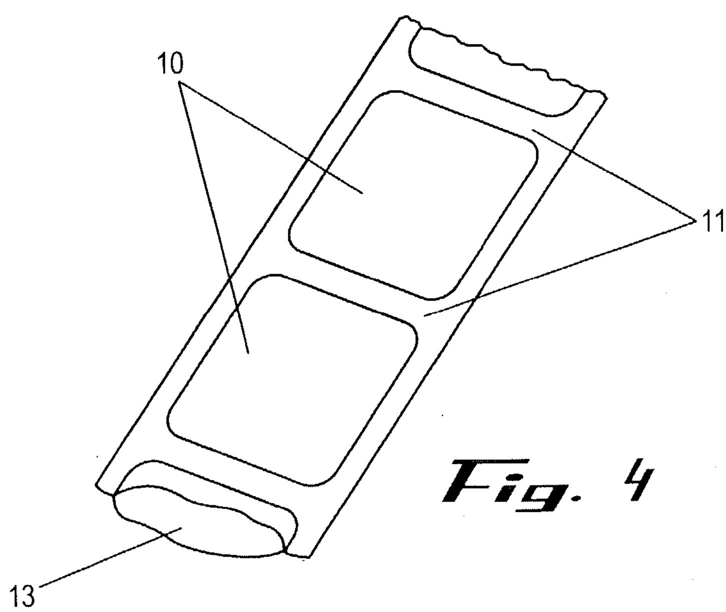


Fig. 4

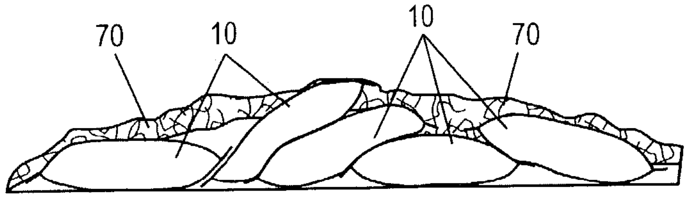


Fig. 6

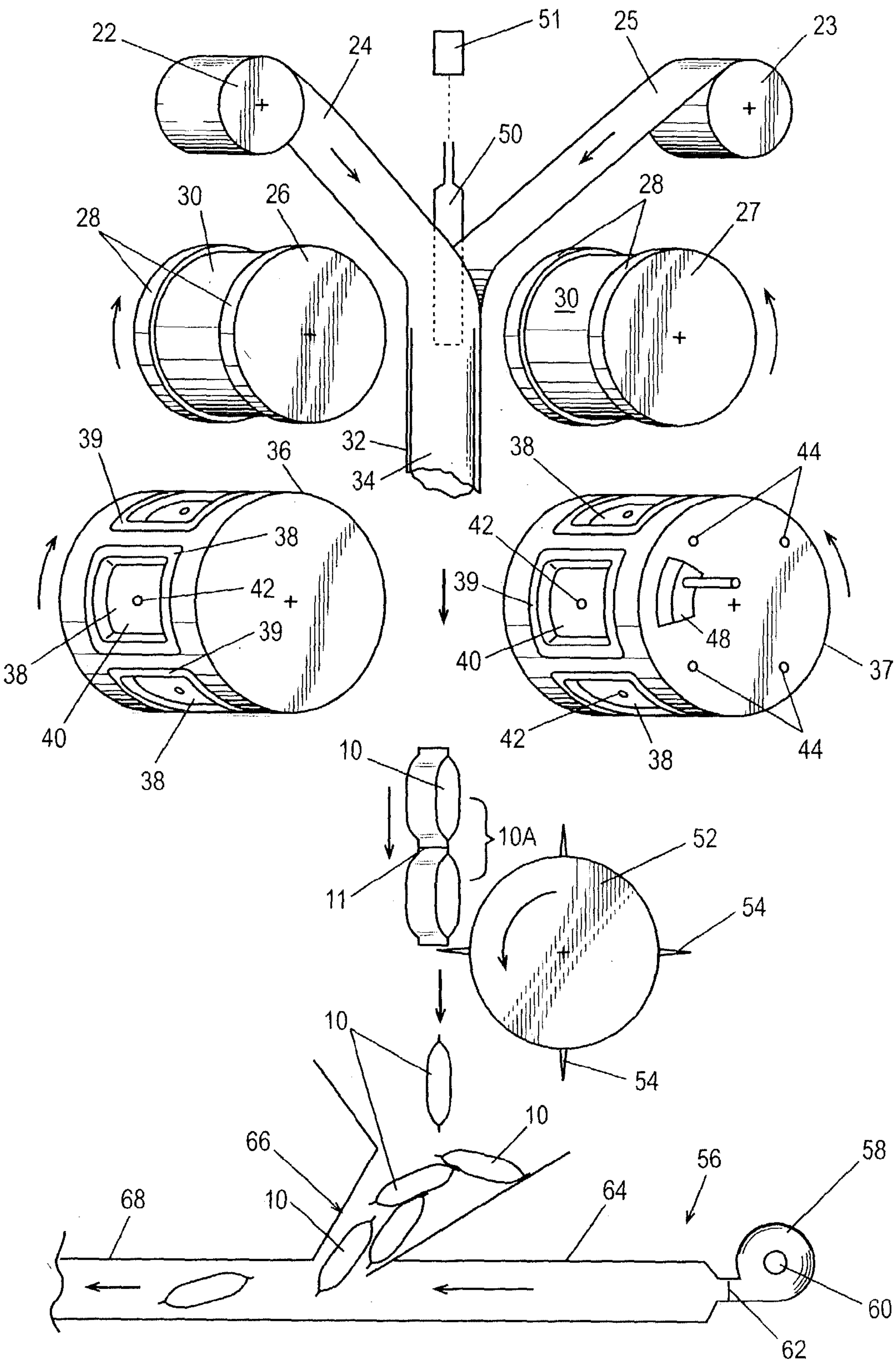

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Fig. 5

ENERGY INSULATION PILLOWS AND SYSTEM FOR INSTALLATION

CROSS REFERENCES

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 10/039,101 filed Jan. 4, 2002; and of U.S. patent application Ser. No. 10/056,730 filed Jan. 25, 2002; and of U.S. patent application Ser. No. 10/103,636 filed Mar. 21, 2002; and of U.S. patent application Ser. No. 10/255,740 filed Sep. 26, 2002.

FIELD OF THE INVENTION

[0002] This invention relates generally to heat insulation for building structures, such as the conventional attic or wall structure of a dwelling. More specifically, the present invention relates to a heat insulator that utilizes an air gap and a radiant barrier facing the air gap for retarding the transfer of heat through the building structure, and the method and apparatus for installing the insulator.

BACKGROUND OF THE INVENTION

[0003] Heat insulation for building structures, used in attics, walls, floors, etc. typically comprise loose material that can be blown into place, particularly into attics, or blanket material that can be manually placed between parallel studs, joists, etc. Generally, the insulation material forms a blanket that includes a network of air pockets or gaps that retard the transfer of heat by convection and conduction. The blanket material can comprise fiberglass, cellulose, mineral wool, and other particulate matter that traps a multitude of air gaps or spaces between the fibers or other matter in the blanket.

[0004] In addition to using the fiber sheet insulation material for convection and conduction insulation, it is also possible to use a heat reflective material to function as a radiant heat barrier. The radiant heat barrier can be used alone or in combination with the conduction and convection heat insulation. For example, the radiant heat barrier can comprise a sheet of foil that has radiant heat reflective surfaces on one or both sides. The foil sheet can be attached to or otherwise combined with convection and conduction heat insulation material for providing radiant heat energy reflective properties, thus adding to the total insulating value of the insulation assembly. Typically, the insulation assembly would be placed between parallel joists, studs, etc. of an outside wall of a building structure. However, it has been found that when the reflective foil sheet makes contact with adjacent surfaces, the foil loses its radiant heat reflective properties in the area where contacted.

[0005] Because of this characteristic, the tendency for providing a heat reflective insulation sheet is to arrange the sheet so that it contacts as few as possible adjacent surfaces. For example, my U.S. Pat. No. 5,918,436 discloses a heat insulating material having multiple sheets of radiant heat reflective foil of different areas attached together at their edges so that when suspended between parallel joists, etc. of a building structure the lower sheet sags due to gravity away from the upper sheet. This forms an air gap between the sheets. The reflective surfaces of the sheets and their air gap function as insulation from radiation, convection and conduction heat transfer. Additionally, the two overlying sheets that form the air gap usually prevent the invasion of dust, stray fibers, grit, sawdust, and other materials from contacting the interior reflective surfaces of the sheets, thereby avoiding the occlusion of the reflective surfaces of the sheets.

[0006] While the radiant barrier concept as disclosed in my U.S. Pat. No. 5,918,436 is effective to this end, it is highly desirable to have the insulation product to be easily installed, as by the use of improved equipment that can place the insulating product properly in a space without requiring skilled labor.

[0007] Another problem with the placement of fiberglass, cellulose, mineral wool, and other prior art conventional fiber insulation is that large amounts of raw material are required to produce the insulation material, the product, when produced, occupies a large volume of space at the manufacturing site, in transport, and in the handling of the product when being installed at the construction site.

[0008] It is to these inadequacies of the prior art that this invention is directed.

SUMMARY OF THE INVENTION

[0009] Briefly described, the present invention comprises an insulating system that limits not only the heat of convection and conduction, but also limits the heat of radiation that is transferred into and out of a building structure, to reduce and retard the heat transfer between adjacent spaces. Typically, the insulating products will be used in building structures between spaces of different temperatures, such as in exterior walls, exterior floors, exterior ceilings, to retard the transfer of heat across these spaces.

[0010] In a preferred embodiment of this invention, lengths of flexible sheet material are placed in superposed relationship with respect to each other. The flexible sheet material typically will be in two layers, such as a first or upper elongated flexible sheet and a second or lower elongated flexible sheet, with the sheets superposed and with their lengths extending parallel and the sheets joined to each other at their side edges. Gas is applied between the sheets to at least partially inflate the sheets and the sheets are sealed at intervals along their lengths to each other so as to form bags or "pillows" having gas trapped in the bags.

[0011] The series of bags formed in this manner can be cut apart from one another or several bags can remain uncut from one another so as to make a strip of bags, if desired. The bags can be fully filled with a gas or only partially filled so as not to occupy the full capacity of the bag material, if desired.

[0012] The sheets of material used to produce the bags include at least one heat reflective surface, and the heat reflective surfaces are oriented to the inside of the bags, so that the heat reflective surfaces face the gas inside the bags and face the opposite sheet. The sheets that form the bags, being completely closed about the gas, shield the interior heat reflective surfaces of the sheets from the entry of dust, fibers, grit, or other substances to the inside of the bags that might tend to occlude the radiant heat reflectivity quality of the inside surfaces of the bags.

[0013] The bags can be fabricated at a central site and transported to a construction site of a dwelling where the bags would be installed in the dwelling. However, in a preferred embodiment of the invention, the bags would be manufactured on the construction site by bringing the sheet material for the bags to the construction site and filling the bags with gas. This latter procedure reduces the volume of the material that is to be transported to the construction site.

[0014] In either of the above procedures, preferably the bags would be installed in a dwelling structure by directing a stream of atmospheric air from a bag supply site outside the building structure to the insulation receiving site within the structure, introducing the bags into the stream of atmospheric air at the bag supply site and moving the bags with the stream of air so that they can be distributed at the bag receiving site inside the structure.

[0015] Typically, the bags will be delivered in a random array at the bag receiving site, with the bags overlapping one another in one or more layers of the bags, so as to substantially cover the entire bag receiving site.

[0016] In most instances where there might be a concern that the bags will move in response to moving air inside the dwelling, a light layer of adhesive can be applied to the bags. The adhesive can be sprayed into the path where the bags are being deposited at the bag receiving site, or the adhesive can be applied after the bags come to rest on the receiving site.

[0017] In another embodiment of the invention, additional insulation material can be mixed with the bags as the bags are being blown into place, such as fiberglass, mineral wool, cellulose, or other conventional insulating material. If desired, the adhesive can be applied to the additional insulation material. The addition of the fibrous insulation material tends to hold the bags in place and to fill in between adjacent ones of the bags.

[0018] The result of the previously described process is a heat insulated building structure that includes the bag receiving site, the bags at the site, and randomly distributed about the site, with the bags having a gas sealed inside, and the bags including at least one ply of sheet material having a heat reflective surface facing the gas so that the heat reflective surface is protected from the entry of dust, etc. that might occlude the reflectivity of the internal heat reflective surface.

[0019] In one embodiment of the invention, the bags can be inflated to a capacity so that the gas occupies less than the full capacity of the bags. This results in the bags being limber so that they can come to rest on an irregularly shaped surface and tend to conform to the shape of that surface. Also, the bags can be distributed individually or can be distributed in strips that are connected together.

[0020] Preferably, the gas that is introduced into the bags will be of low humidity, and the gas can comprise air, Argon, Xenon, carbon dioxide, Krypton, and nitrogen.

[0021] The material from which the bags are constructed can be polyester, polyethylene, polypropylene, all with a reflective surface applied thereto, or aluminum foil, and _______ and _______. The plastics described above would be coated with a metalized surface that is radiant heat reflective, such as aluminum so that the reflected heat surface can be oriented internally of the bag, facing the gas, and protected from outside debris.

[0022] Therefore, it is an object of this invention to provide an improved insulation product for distribution at an insulation site within a building structure, such as in an attic of a dwelling or in a wall structure, with the insulation produce having gas trapped therein and a radiant heat reflective surface facing the gas and protected by the exterior of the product from the introduction of dust, etc. that might tend to occlude the heat reflective qualities of the internal surface of the bag.

[0023] Another object of this invention is to provide an improved system for producing heat insulation at a building site.

[0024] Another object is to provide an improved heat insulated building structure.

[0025] Another object of the invention is to provide an improved method of installing heat insulation in a building structure.

[0026] Other objects, features and advantages of the present invention will become apparent upon reading the following specification, when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] **FIG. 1** schematically illustrates the process of moving the insulation bags to the insulation receiving site.

[0028] **FIG. 2** is a side elevational view of the insulation bags delivered to the insulation receiving site, with the bags partially inflated.

[0029] **FIG. 3** is a side elevational view, similar to **FIG. 3**, but showing the bags fully inflated.

[0030] **FIG. 4** is a perspective illustration of a series of connected bags.

[0031] **FIG. 5** is a schematic illustration, in perspective, showing how the heat insulating bags can be constructed at a building site and transported away from the building site into the insulation receiving site.

[0032] **FIG. 6** is a side elevational view of the insulation bags delivered to the insulation receiving site, with additional fibrous insulation applied over the bags.

DETAILED DESCRIPTION

[0033] As illustrated in **FIG. 1**, bags or "pillows" **10** of heat insulation material are to be delivered to a bag receiving site **12** such as the attic in a dwelling. Typically, the attic would include a plurality of joists **14** arranged parallel to one another, gypsum board **16** or other ceiling material applied to the lower surfaces of the joists, and fibrous insulation, such as fiberglass **18** placed on the top surface of the gypsum board. The insulation bags **10** are applied over the fibrous insulation **18**. The insulation bags **10** can be applied to other structures, such as directly to the ceiling gypsum board **16** when fibrous insulation is not present on the gypsum board.

[0034] In order to make sure that the insulation bags **10** stay in place, a spray of adhesive from a dispenser **20** can be sprayed onto the surfaces that the bags contact, or onto the bags themselves, or onto additional fiber insulation installed with the bags, so that the bags tend to cling to the adhesive and resist movement. This avoids movement of the bags in response to air flowing through the attic, etc., such as by the use of an attic fan in the building structure. The spray can be applied directly to the bags or to other insulation as they move toward the insulation receiving site, or after the bags have settled in place in the attic. Other such means for holding the bags in place can be employed, if desired.

[0035] As illustrated in **FIG. 2**, the bags **10** can be partially inflated so that they tend to sag and assume the shape of an adjacent object when they come to rest on the object. This usually causes the bags to be located relatively snug with respect to each other, tending to make a continuous layer of the bags across the insulation receiving site.

[0036] **FIG. 3** shows a similar array of bags at an insulation receiving site, but with the bags being more fully inflated. It can be noted that while the bags occupy more vertical space, they tend to stand off more from one another.

[0037] **FIG. 4** illustrates a strip of the bags that are formed connected to one another with intervening seams **11**, and with internal reflective surfaces **13**. The bags can be installed in strips of a desired length, if desired.

[0038] A method of installing the heat insulation in a building structure is illustrated in **FIG. 5**. Separate supplies **22** and **23** of sheet material feed sheets in superposed relationship so that their side edges are aligned. The sheets **24, 25** can bear a heat reflective surface **13** across their entire facing surfaces or have the heat reflective surface applied only to their central portions, leaving the edges free of the reflective material for better heat sealing. Also, the heat reflective material can be interrupted along its length, leaving exposed areas where the sheets can be heat sealed together. The sheets **24** and **25** are fed between edge sealing rollers **26** and **27**, which are heated and which have raised annular ends, such as the raised annular ends **28** of edge sealing roller **26**, so that the raised ends straddle an annular recess **30**. The raised ends **28** of the opposed rollers are biased toward each other, trapping the edges of the sheets **24** and **25** and sealing the edges together to form edge seals **32** and **33**. The sealed edges can be connected by heat sealing of the material with the rollers being heated, or by depositing adhesive between the edges of the sheets, depending on the materials used. This forms an elongated tube **34** between the sealed edges **32** and **33**.

[0039] The pair of edge sealed sheets then move between a pair of vacuum rolls **36, 37**. The vacuum rolls each include a series of recesses **38** about their respective perimeters, and the vacuum rolls are rotated in timed relationship so that their recesses **38** engage with each other on opposite sides of the tube **34** of sheet material. The perimeters **39** of the vacuum recesses **38** engage one another, are heated and tend to fuse the material of the tube **34** into a rectangular shape. If the material of the sheets is not suitable for heat sealing, other sealing procedures can be used, as by applying adhesive between the sheets and pressing the sheets together at the adhesive. Also, one sheet can be made of material that seals in response to heat and the opposite sheet made with a heat reflective surface facing the inside of the tube and the sheets can be heat sealed together.

[0040] As the heated perimeters **39** of the opposite rolls come together, they define an open, unsealed space **40** which is recessed inwardly of the perimeters **39**. A vacuum port **42** is formed in the bottom of each open space **40** and each vacuum port communicates with a side opening **44** in the side of its vacuum roll **36** or **37**. The side openings **44** move into communication with a vacuum shoe **48** that draws a vacuum through the side opening **44** to the vacuum port **42** in the recess of the open space **40** of the working surface of the vacuum rolls **36**. This has the effect of pulling the air out of the recesses **38** as the tube **34** formed by the sheets **24, 25** passes in contact with the vacuum rolls **36, 37**, thereby drawing the respective sheets into the recesses **38**, forming the shape of the bags **10**. The heated surfaces of the perimeter **39** of the vacuum rolls **36, 37** seal the heat fusible material of the sheets **24, 25**, forming the perimeter about the bags.

[0041] In the meantime, gas is supplied between the sheets by flat nozzle **50** that extends from a pressurized source of gas **51** between the sheets **24, 25** as the sheets come together and as the sheets begin the sealing action at their edges **32, 33**. The nozzle is supplied with the preferred gas, which can be air, Xenon, carbon dioxide, Argon, or other gasses. Preferably, the gasses will be dehumidified, containing only extremely small amounts of moisture. As the sheets are pulled apart by the action of the vacuum applied by the vacuum rolls **36** and **37**, the gas from the nozzle **50** will fill the interior space between the sheets so that when the sheets are later closed together to form the bags **10** by the perimeter **39** of the vacuum rolls **36, 37**, the gas will be trapped in the bags.

[0042] As shown in **FIG. 5**, it can be seen that the bags **10** are formed in a strip, shown at **10A**. If desired, the bags can be cut apart by a cutter **52**. The cutter can be modified so as to remove some of its blades **54** and/or to revolve at a different speed so that the bags can be made in strips that are cut apart at certain intervals. Preferably, the bags are cut apart at the intermediate seams **11**, but if the strip of several bags is cut across one of the bags, the adjacent bags of the strip will not be cut and will function as disclosed.

[0043] Once the bags pass the cutter **52**, the bags will be received under the influence of gravity in the inlet of an air delivery system **56**.

[0044] The air delivery system **56** includes a blower **58** having an inlet **60** that draws in atmospheric air and an outlet **62**. The outlet is connected to a conduit system **64** that includes an inlet funnel **66** that catches the bags **10** and feeds the bags by gravity and under the influence of entering air through the conduit system **64**. The delivery end **68** of the conduit system is formed of flexible material and is of a length sufficient to reach the insulation receiving site of **FIG. 1**.

[0045] While **FIG. 5** illustrates separate sheets **24** and **25** being fed to the system, it will be understood that a single sheet can be fed to the system, folded along its length to make overlying plies, and then passed through the system as disclosed. Also, the bags can be made by other processes if desired, with the bags being compatible for installation by air transport as described.

[0046] The manufacturing system of **FIG. 5** can be located at the bag supply site placed adjacent the building structure and its insulation receiving site. However, it is possible that the structure that forms the bags can remain at a manufacturing site, with the bags being formed and filled at the manufacturing site, transported to the construction site of the dwelling, and then moved into the insulation receiving site either by the air delivery system **56** or other conventional means.

[0047] Another alternative is to produce the tube **34** of sheet material, with its sealed edges **32** and **33**, at a tube manufacturing site but without its cross seals as formed by the vacuum rolls **36** and **37**. The tube, which has not yet been filled with gas and is in a flat configuration, would be transported in its flat, compact condition from its manufacturing site to the construction site of the building. The vacuum rolls **36** and **37** and cutter **52** would be located at the construction site of the building and the tube **34**. Then the tube would be filled with gas in the manner described by passing the tube between the vacuum rolls **36** and **37** and filling the tube with gas with a nozzle **50** and forming the tube into bags with the vacuum rolls **36** and **37**, and then separating the bags with a cutter **52**.

[**0048**] While the bags have been described as having the heat reflective surface facing the inside of the bag, the bag also can bear a heat reflective exterior surface for reflecting heat. While the exterior surface will not be protected from occlusion by the sheet material of the bag, the exterior heat reflective material will function to reflect heat unless or until it becomes occluded by adjacent objects, dust, etc. The use of heat reflective material on both surfaces of the sheet material increases the radiant heat insulation value of the bags.

[**0049**] As shown in **FIG. 6**, additional insulation, such as fibrous insulation **70** can be installed over the bags **10**. The fibrous insulation can be blown in place with the same air delivery system **56** that blows the bags into the bag receiving site. In addition, adhesive can be sprayed onto the blown insulation to help hold the blown insulation and the bags **10** in place.

[**0050**] Although preferred embodiments of the invention has been disclosed in detail herein, it will be obvious to those skilled in the art that variations and modifications of the disclosed embodiments can be made without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. A method of installing heat insulation in a building structure, comprising:

forming a plurality of bags containing air at a bag supply site adjacent an insulation receiving site,

directing a stream of atmospheric air from the bag supply site to the insulation receiving site,

introducing bags into the stream of atmospheric air at the bag supply site,

moving the bags in the stream of atmospheric air to the insulation receiving site, and

distributing the bags about the bag receiving site.

2. The method of claim 1, and further including the step of applying adhesive to said bags to stabilize the bags in the positions assumed in the receiving site.

3. The method of claim 2, wherein the step of applying adhesive to the bags comprises spraying adhesive on said bags when the bags have been distributed about the bag receiving site.

4. The method of claim 1, wherein the step of forming a plurality of bags containing air comprises providing at least two plies of material, placing the plies of material in superposed positions, trapping air pockets between the superposed plies, and sealing the plies of material together with air pockets trapped between the plies.

5. The method of claim 4, wherein the step of sealing the plies of material together comprises heat sealing the plies together.

6. The method of claim 4, wherein the step of sealing the plies of material together comprises adhesively sealing the plies together.

7. The method of claim 4, wherein the step of providing plies of material comprises providing at least one of the plies of material that has a radiant heat reflective surface.

8. The method of claim 7, wherein the step of placing the plies together comprises orienting at least one of the heat reflective surfaces of the plies toward the air trapped between the plies.

9. The method of claim 1, wherein the step of forming the bags comprises forming bags having reflective surfaces.

10. The method of claim 1, wherein the step of forming a plurality of bags comprises forming a plurality of bags in a connected series of bags.

11. The method of claim 10, and further including the step of separating the bags from one another before the bags are distributed in the bag receiving site.

12. A method of installing heat insulation in an insulation receiving site of a building structure, comprising:

forming a plurality of bags containing gas,

directing a stream of atmospheric air to the insulation receiving site,

introducing bags into the stream of atmospheric air,

moving the bags in the stream of atmospheric air to the insulation receiving site, and

distributing the bags about the bag receiving site.

13. The method of claim 12, and further including the step of applying adhesive to the exterior of the bags to stabilize the bags in the positions assumed in the receiving site.

14. The method of claim 12, wherein the step of applying adhesive to the.bags comprises spraying adhesive on said bags when the bags have been distributed about the bag receiving site.

15. The method of claim 12, and further including the step of applying a cover over the bags in the bag receiving site.

16. The method of claim 12, wherein the step of forming a plurality of bags comprises forming a plurality of bags in a connected series of bags.

17. The method of claim 16, and further including the step of separating the bags from one another before the bags are distributed in the bag receiving site.

18. The method of claim 12, wherein the step of forming the bags containing gas comprises forming bags containing gas selected from the group of gasses having a humidity of less than 10%, consisting essentially of: nitrogen, Krypton, air, Argon, carbon dioxide, and Xenon.

19. The method of claim 12, and further including the step of dehumidifying the gas.

20. The method of claim 12, wherein the step of forming a plurality of bags comprises forming the bags of a material having a reflective surface, the material selected from the group consisting essentially of: polyester, polyethylene, polypropylene, with a reflective surface applied thereto, and aluminum foil.

21. The method of claim 12, wherein the step of forming the plurality of bags containing gas comprises forming the bags with the gas filling less than the full capacity of the bags.

22. The method of claim 12, wherein the step of forming the plurality of bags containing gas comprises forming the bags in a connected series of bags, and the step of moving the bags in the stream of air comprises moving the bags in a connected series.

23. The method of claim 12, wherein the step of forming a plurality of bags containing gas comprises forming the bags separated from one another, and the step of moving the bags in the stream of air comprises moving the bags separately.

24. The method of claim 12, wherein the step of directing a stream of air to the bag receiving site comprises providing a flexible conduit, extending a delivery end of the conduit to the bag receiving site, and moving the stream of atmospheric air through the flexible conduit.

25. The method of claim 12, and further including the step of applying a cover of heat insulation material over the bags distributed about the bag receiving site.

26. The method of claim 12, wherein the step of forming a plurality of gas comprises forming the bags with sheet material having a radiant heat reflecting surface of the bags facing the gas.

27. A method of installing heat insulation in a building structure, comprising:

forming a tube of sheet material,

filling the tube with gas,

dividing the tube and gas into a series of inflated bags,

distributing the inflated bags about a bag receiving site in the building structure.

28. The method of claim 27, wherein the steps of forming the tube of sheet material and progressively filling the tube with gas is performed at the building structure.

29. The method of claim 27, wherein the step of forming the tube of sheet material is performed away from the building structure, and further including the step of transporting the tube of sheet material to the building structure, and wherein the steps of progressively filling the tube with gas and dividing the tube into bags are performed at the building structure.

30. The method of claim 27, wherein the step of forming a tube of sheet material comprises forming the tube with radiant heat reflective surface.

31. The method of claim 27, wherein the step of forming a tube of sheet material comprises forming the tube with a radiant heat reflective surface facing the inside of the tube.

32. A method of insulating a building structure, comprising:

forming a plurality of gas inflated bags at the building structure,

distributing the gas inflated bags into a insulation receiving site of the building structure.

33. The method of claim 32, wherein the step of forming a plurality of gas inflated bags comprises forming the gas inflated bags with a heat reflective surface facing the gas.

34. The method of claim 33, wherein the step of distributing the gas inflated bags comprises moving the bags from a bag receiving site in a stream of air into the insulation receiving site.

35. The method of claim 33, wherein the step of forming a plurality of gas inflated bags comprises forming the bags in a connected series of bags and separating the bags from one another.

36. A heat insulated building structure comprising:

a bag receiving site,

a plurality of bags,

said bags having a gas sealed inside,

said bags each including at least one ply of material having a heat reflective surface facing said gas, so that the bags protect the heat reflective surfaces from becoming occluded by dust, fibers and other materials, and

said bags randomly distributed about said bag receiving site.

37. The heat insulated building structure of claim 36, wherein said gas occupies less than the full capacity of said bags.

38. The heat insulated building structure of claim 36, wherein said bags are unconnected from one another.

39. The heat insulated building structure of claim 36, wherein some of said bags are formed in a connected series.

40. The heat insulated building structure of claim 36, wherein said bags are formed of a material consisting essentially of: polyester, polypropylene, polyethylene, or aluminum foil, all bearing a heat reflective surface.

41. The heat insulated building structure of claim 36, wherein said bags contain a dehumidified gas selected from the group consisting essentially of: Argon, Xenon, air, carbon dioxide, Krypton and nitrogen.

42. The heat insulated building structure of claim 36, and further including a layer of fibrous heat insulation material extending about said bags.

43. The heat insulated building structure of claim 36, and further including means for holding said bags in place.

44. The heat insulated building structure of claim 43, wherein said means for holding said bags in place comprises fibrous insulation applied over said bags and adhesive applied to the fibrous insulation.

* * * * *