April 21, 1942. P. A. VOIGT ET AL 2,280,460

APPARATUS FOR USE IN INSULATING STRUCTURES

Filed April 3, 1940 2 Sheets-Sheet 1

Fig. 1.

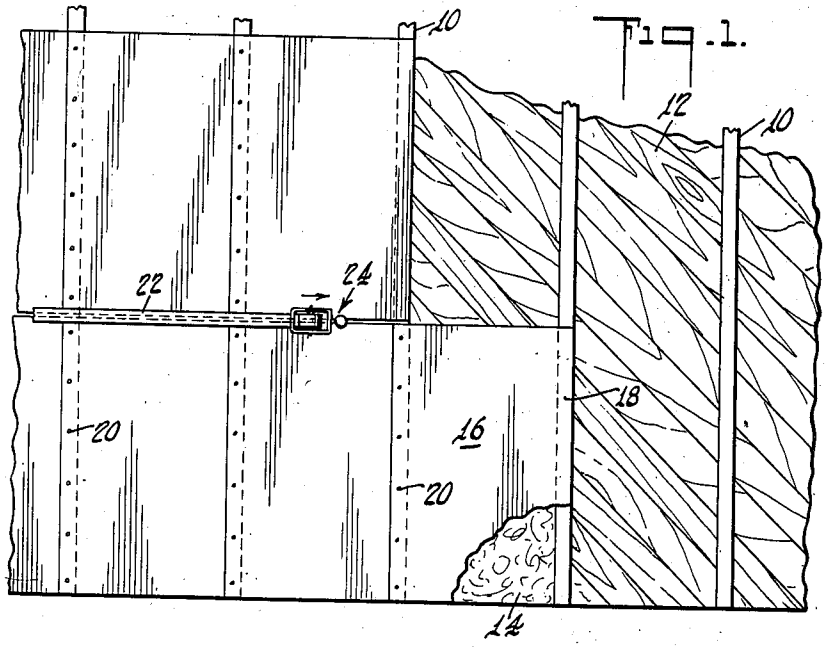
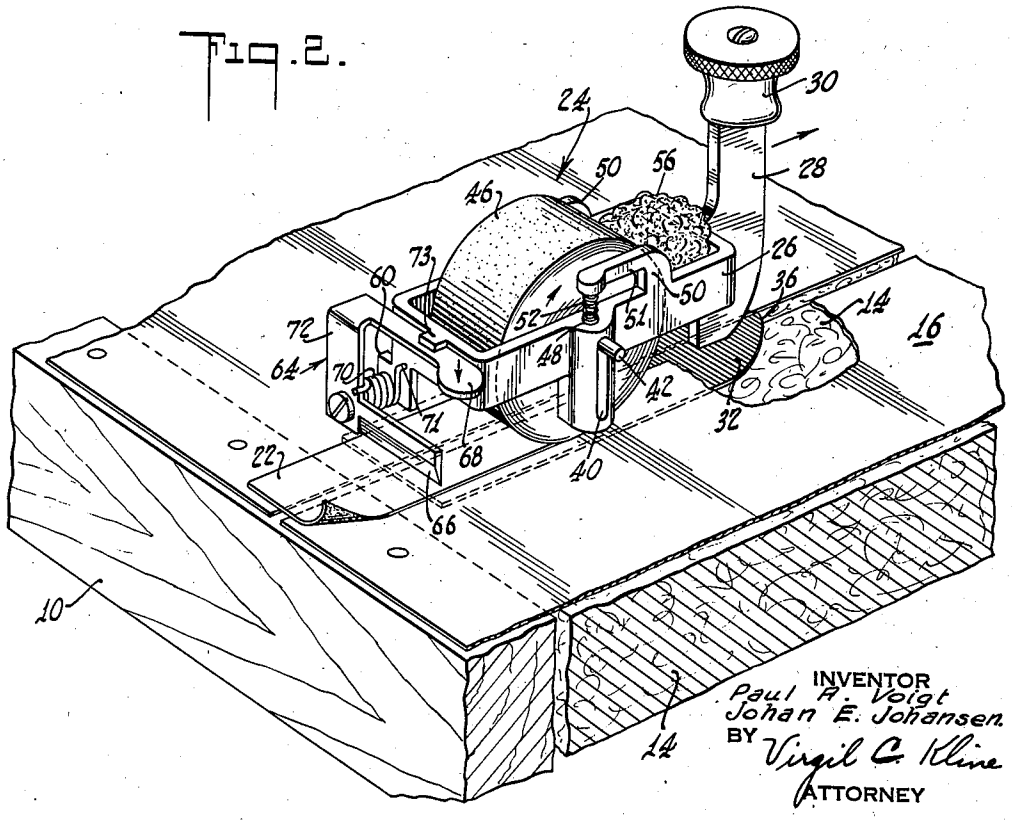


Fig. 2.



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Fig. 3.

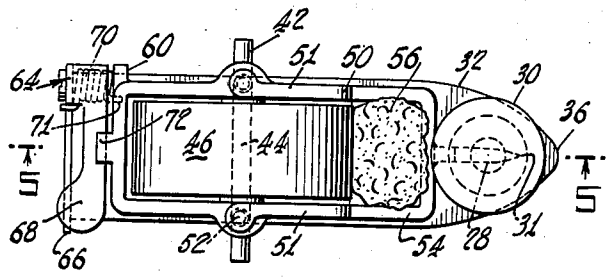


Fig. 4.

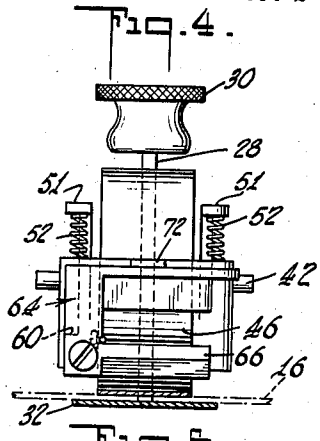


Fig. 5.

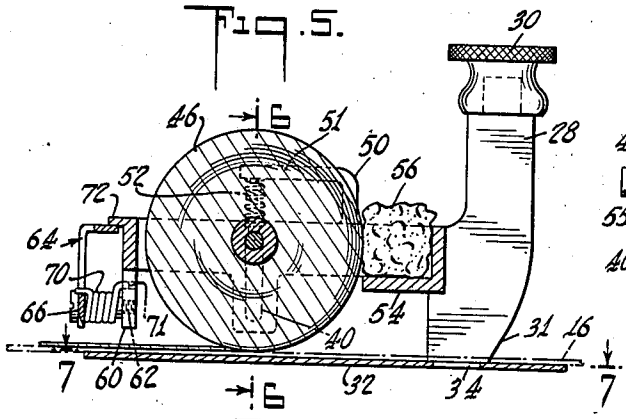


Fig. 6.

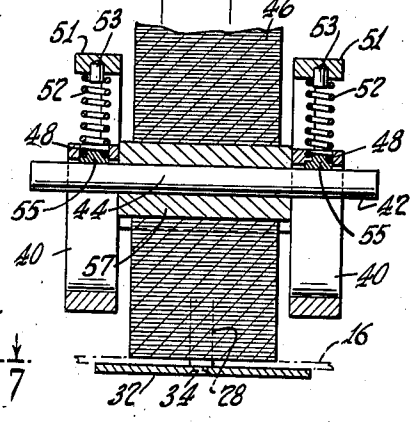


Fig. 7.

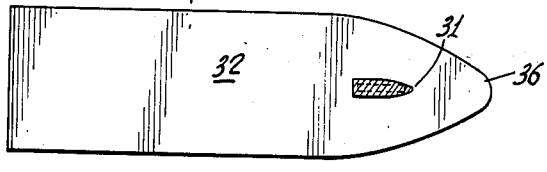


Fig. 8.

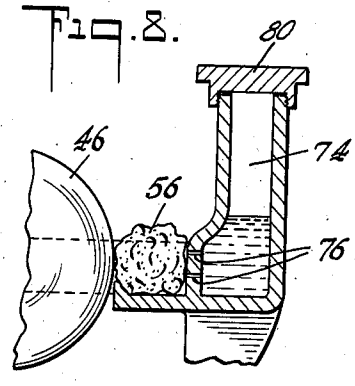
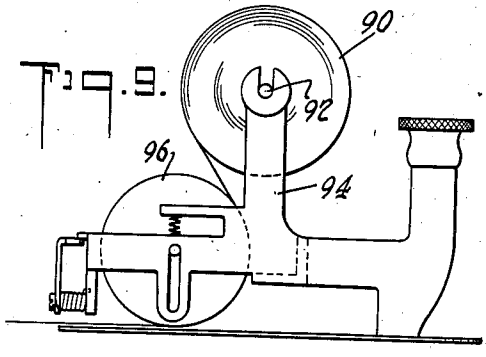


Fig. 9.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR USE IN INSULATING STRUCTURES

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Application April 3, 1940, Serial No. 327,676

11 Claims. (Cl. 216—29)

Our present invention relates to a device for use in insulating building structures, and particularly to a device for use in obtaining a substantially vapor-proof seal for the interior of an insulated wall.

The insulation of frame buildings and the like by the insertion of insulating batts between the studs, rafters, joints, or other framing members is now well known.

It is conventional to secure a backing sheet to the insulating batts of the type referred to, the backing sheets including extending side flanges which are secured to the studs or other framing members to support the insulation in position. The backing sheets also serve the additional function of a vapor seal to prevent the penetration of the moisture vapor from the building interior to the wall spaces where it may have deleterious effects. However, although generally effective for this latter purpose, the backing sheets do not provide a continuous seal, due to the numerous joints between vertically adjacent batts through which the moisture vapor may penetrate.

An object of the invention is to provide a device which will permit of the ready application of a sealing means, such as an adhesive coated tape, over the joints between adjacent batts.

A further object of the invention is the provision of a device, as referred to above, which includes means to underlie the marginal edges of the adjacent backing sheets to support the same against the tape or other sealing means as it is applied, the relatively yieldable character of the batts preventing them from alone constituting any adequate support.

A still further object of the invention is the provision of a device of the type referred to which may be used with conventional sealing tapes and which includes a cut-off means and is otherwise so constructed as to permit of rapid and efficient manipulation.

Our invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow and to the accompanying drawings, in which:

Fig. 1 is an elevational view of a wall or the like illustrating the instant invention;

Fig. 2 is an enlarged detail view illustrating a sealing means applying device and its method of operation;

Fig. 3 is a plan view of the applying device of Fig. 2;

Fig. 4 is an end view of the device of Fig. 3;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 3;

Fig. 6 is an enlarged detail sectional view with parts broken away taken on the line 6—6 of Fig. 5;

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 5;

Fig. 8 is a detail view showing a modification of the invention; and

Fig. 9 is a diagrammatic elevational view illustrating a further modification of the invention.

Referring now to the drawings, and particularly to Figs. 1 and 2, there is shown a vertical wall of a frame house or the like, the wall comprising studs 10 supporting an exterior sheathing 12. It will be understood that a vertical wall has been shown merely for the purposes of illustration and that the invention is equally applicable to a roof, floor, or other wall. Also, it will be understood that the wall construction specifically shown is for exemplary purposes only and that the invention may be employed with any suitable conventional type of wall structure which includes spaces in which insulating batts may be inserted.

The spaces between the studs 10 have inserted therein insulating units comprising a felted unit 14 of mineral wool or other fibrous insulating material, the batt including a backing sheet 16 secured thereto preferably by an asphalt or other suitable adhesive. The backing sheets 16 are of a substantially vapor-proof material and suitably may comprise a heavily asphalted kraft or similar paper. The backing sheets include flanges 18 extending beyond the batts and secured to the studs or other framing members 10 as by nails 20. If desired, a layer of asphalt or other lap cement may be applied to the edges of the studs and the overlapping flanges 18 to insure the positive sealing of the longitudinal joints between the units. Insulating units are placed in the stud spaces in endwise contiguous relationwise, a sufficient number being employed to extend the entire height of a wall.

In accordance with the instant invention, a sealing member is secured, preferably by an adhesive, to the backing sheets in a position to cover the horizontal joints therebetween. Thus, after the insulating units are in position, a tape 22 of a substantially vapor-impervious material is adhesively secured over the horizontal joints to bridge the same. The tape may be of any of the usual types of sealing tapes, as, for example, a cloth or paper ribbon coated or impregnated with a material which becomes adherent upon the application of moisture or pressure. The tape may be applied across joints individual to each stud space, or if the joints between the units of adjacent stud spaces are in substantial alinement, as shown, for example, in Fig. 1, the tape may be applied continuously over the same.

A tape applying device 24 is provided, as shown in detail in Figs. 2–9, inclusive, which in

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its preferred embodiment comprises a rectilinear hollow frame **26**. Secured to the forward end of the frame is a shank **28**, including a knob or other operating handle **30** at its upper end. At least the lower end of the shank is made relatively thin and is preferably beveled at its forward edge, as indicated at **31** (see Fig. 7), to adapt it to be readily inserted between the adjacent edges of the backing sheets at the joint. The shank is connected to a resistance flange **32** as by an integral rivet or other suitable means **34**. Flange **32** is dimensioned to underlie the joint for preferably the full width of the sealing tape **22** opposite the point of application of the tape. The forward end of flange **32** is preferably rounded or pointed, as indicated at **36** (see Figs. 2, 3, and 7), to promote its ready insertion beneath the marginal portions of the backing sheets. Frame **26** includes elongated bearing slots **40** for the reception of journals **42** of a spindle **44**, on which is supported a roll **46** of the adhesive tape **22**.

Frame member **26** at each side thereof above the elongated bearing slots **40** is provided with openings **48** leading into the slots. Projecting from each side of the frame **26** are preferably integral members **50**, including extending arms **51** overlying the openings **48**. Compression springs **52** are located at opposite sides of the frame, each with one end held in position against the arm **51** of a member **50**, as by a pin **53**, and the other end penetrating an opening **48** and pressing through a suitable bearing element **55** against a journal **42**, whereby the spindle **44** will be spring pressed downwardly, and hence, roll **46**, carried thereby, will be pressed against the marginal edges of the backing sheets supported by flange **32**.

Secured interiorly of the frame at its forward end is a flange or shelf **54** to receive a sponge or other moisture supplying element **56**, which is adapted to moisten the adhesive on the tape of roll **46** as it is unwound therefrom. In Fig. 8, a form of the device is shown in which the upper portion of shank **28** is of enlarged cross section, as compared with that of Figs. 2–5, inclusive, and is hollow to provide a water reservoir **74**. The front wall of the reservoir is perforated as at **76** to permit the moisture from the reservoir to penetrate and wet the moistening device or sponge **56**, whereby the same is constantly maintained in the proper moistened condition. Reservoir **74** may be closed at the upper end by a cap **80**, which in this instance serves the additional function of the handle **30** of the forms shown in the other figures.

The rear end of frame **26** carries an extending lug **60** into which is preferably screw threaded or otherwise secured a pin **62**. Mounted on pin **62** and confined by the head thereof is a cut-off device **64**, including a knife blade **66** and an operating handle **68**. A coil spring **70** surrounds pin **62** and has one end secured to the frame at **71** and the other to an arm **72** of the cut-off device, whereby downward movement of handle **68** and blade **66** is resisted by the spring and upon release of pressure on the handle the device is returned to the position shown in the drawings, with the handle in contact with a stop lug **73**. Knife blade **66** is preferably positioned to pass closely adjacent the rearward edge of flange **32** in its cutting movement, whereby the flange serves as a relatively fixed shearing blade cooperating with blade **66** in the severing action.

In the operation of the tape applying apparatus described above, a roll **46** of tape **22** is mounted upon spindle **44**, for example, by placing the roll in position within the frame with spindle **44** removed and then inserting the spindle from either side endwise into slot **40** beneath bearing element **55**, and forcing it through the bore formed in roll **46** or roll core **57** (see Fig. 6) and then through the opposite slot **40** beneath the other bearing element. The leading end **34** of resistance flange **32** is inserted beneath marginal edges of the backing sheets **16** at the joint adjacent one of the framing members **10**. The handle **30** is then grasped and the device **24** drawn as a whole along the joint. A portion of the tape on roll **46** is initially adhered over the joint adjacent an end thereof and upon further movement of the device **24**, the tape automatically feeds from the roll, is moistened, and is pressed, due to the spring mounting of the spindle **44** and the presence of the resistance flange **30**, firmly against and is adhered to the marginal edges of the backing members to effectively seal the joint therebetween. If the joints between the backing sheets of a plurality of the stud spaces are in alinement, the operation can continue as long as such alinement lasts. When the tape is to be severed, handle **68** of the cut-off device is depressed to force blade **66** into severing relationship to the tape. Upon removal of the depressing force, the blade **66** returns through the action of the spring to the position shown.

Referring now to Fig. 9, a further form of the invention is shown, specifically applicable in those cases where it is desired to have the tape rolled with the adhesive coated side inwardly. In this case, the tape roll **90** is mounted upon a suitable spindle **92**, supported from the frame as by members **94**, and a roll **96**, preferably rubber faced, is mounted to be spring pressed downwardly similarly as roll **46** of the devices of the other figures. In operation, the tape is drawn from roll **90** and its adhesive face carried past the moistening device and pressed into engagement with the margins of the backing sheets at the joint by roll **96**, such margins being supported by the resistance flange as before.

In lieu of an adhesive tape in which moisture is used to sensitize the adhesive, one carrying a pressure sensitive adhesive may be similarly employed. In this case, the sponge **56** or other moistening means is unnecessary and may be omitted. It will also be understood that although the tape applying device has been specifically described for use in the sealing of the joints between the backing sheets of insulating members, it is equally well adapted for many other uses where similar problems are involved.

Having thus described our invention in rather full detail, it will be understood that these details need not be strictly adhered to, but that various changes and modifications will suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What we claim is:

1. A device for applying an adhesive tape over a joint between adjacent edges of sheet-like backing members of insulating batts, comprising a frame, means carried by the frame for underlying and supporting the marginal edges of said members at said joint, and means carried by said frame for yieldably pressing adhesive surfaced material against said marginal edges supported by said first-mentioned means.

2. A device for applying an adhesive surfaced strip over a joint between adjacent edges of

sheet-like members, comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, and means carried by said frame for yieldably pressing an adhesive coated strip against said marginal edges supported by said resistance flange.

3. A device for applying an adhesive coated tape over a joint between adjacent edges of sheet-like members, comprising a frame, a relatively wide flat resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, a relatively narrow neck adapted to be inserted between said adjacent edges connecting said flange to said frame, a spindle supporting a roll of tape, elongated bearings in said frame for supporting said spindle to permit vertical movement of the same relatively to said resistance flange, and spring means acting on said spindle for urging the roll carried thereby against said marginal edges and said marginal edges against said resistance flange.

4. A device for applying an adhesive tape over a joint between adjacent edges of sheet-like members, said device comprising a frame, means carried by said frame for underlying and supporting the marginal edges of said members at said joint, means for supporting a roll of adhesive coated tape on said frame, means carried by said frame for spring pressing tape unwound from said roll against said marginal edges supported by said first-mentioned means, and means for sensitizing the adhesive on said tape.

5. A device for applying an adhesive surfaced strip over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, a spindle carried by said frame supporting a roll of adhesive surfaced strip material, means for spring pressing said strip material against said marginal edges supported by the resistance flange as the strip material is unwound from the roll, and a handle member connected to said frame for moving the device along the joint.

6. A device for applying an adhesive surfaced strip over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, means carried by said frame for spring pressing an adhesive coated strip against said marginal edges supported by said resistance flange, and means carried by said frame and cooperating with said flange for severing said strip.

7. A device for applying an adhesive surfaced strip over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, means carried by said frame for spring pressing an adhesive coated strip against said marginal edges supported by said resistance flange, and means carried by said frame for severing said strip, said last-named means comprising a knife blade mounted for swinging movement, an operating handle connected to said blade and adapted to be depressed to swing said blade, and spring means arranged to return said blade and handle to an inoperative position after the depressing force is removed from said handle.

8. A device for applying an adhesive coated tape over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, a relatively narrow neck adapted to be inserted between said adjacent edges connecting said flange to said frame, a spindle supporting a roll of tape, elongated bearings in said frame for supporting said spindle to permit vertical movement of the same relatively to said resistance flange, spring means acting on said spindle for urging the roll carried thereby toward said resistance flange, and means carried by said frame for sensitizing adhesive on said tape as it is unwound from said roll.

9. A device for applying an adhesive coated tape over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, a relatively narrow neck adapted to be inserted between said adjacent edges connecting said flange to said frame, a spindle supporting a roll of tape, elongated bearings in said frame for supporting said spindle to permit vertical movement of the same relatively to said resistance flange, spring means acting on said spindle for urging the roll carried thereby toward said resistance flange, and an operating handle carried by said frame for moving said device along the joint.

10. A device for applying an adhesive coated tape over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, a relatively narrow neck adapted to be inserted between said adjacent edges connecting said flange to said frame, a spindle supporting a roll of tape, means for urging the tape toward said resistance flange as it is unwound from said roll, and means for moistening adhesive on said tape as it is unwound from the roll, said last-named means including a water reservoir, a moisture applying element in contact with the adhesive on said tape and communicating channels between said reservoir and said moisture applying means.

11. A device for applying an adhesive coated tape over a joint between adjacent edges of sheet-like members, said device comprising a frame, a resistance flange carried by said frame and arranged to underlie the marginal edges of said sheet-like members at said joint, means connecting said flange to said frame, a spindle supporting a roll of tape from said frame, and means carried by said frame for urging tape unwound from said roll toward said resistance flange, said last-named means comprising a roll positioned to overlie said flange, and spring means urging said roll toward said flange.

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