

July 12, 1955

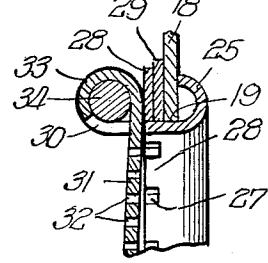
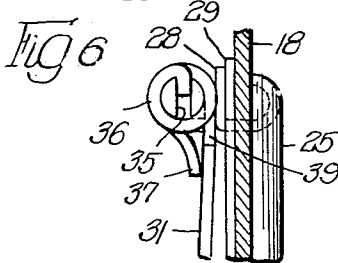
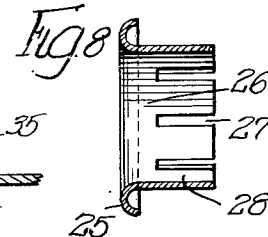
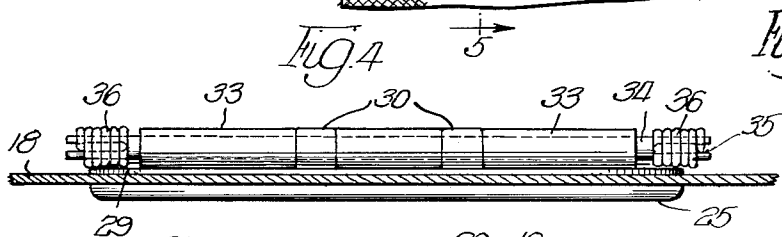
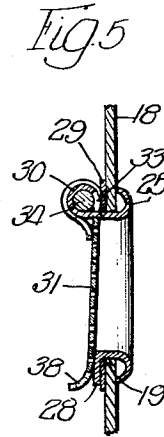
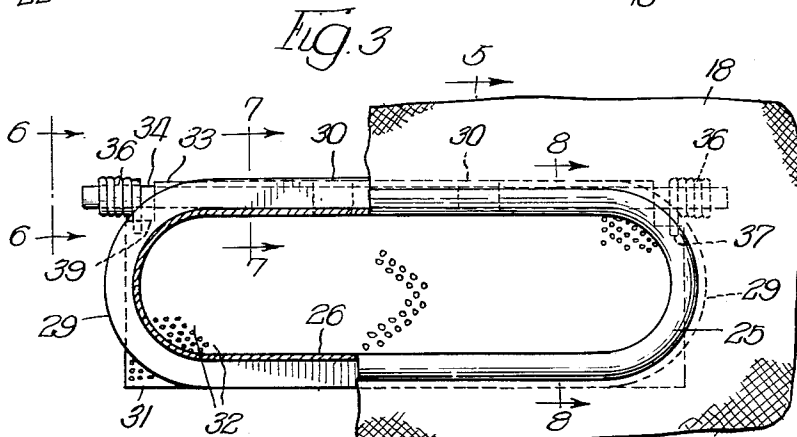
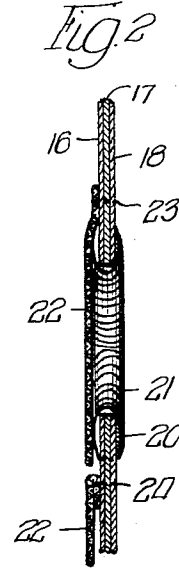
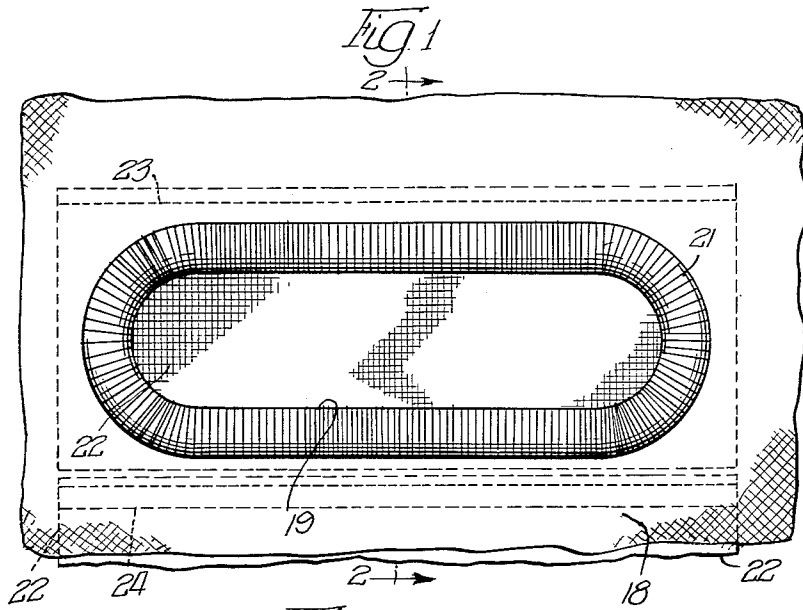
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2,712,656

VENTILATING DEVICES FOR MATTRESSES

Filed May 5, 1952

3 Sheets-Sheet 1



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VENTILATING DEVICES FOR MATTRESSES

Filed May 5, 1952

3 Sheets-Sheet 2

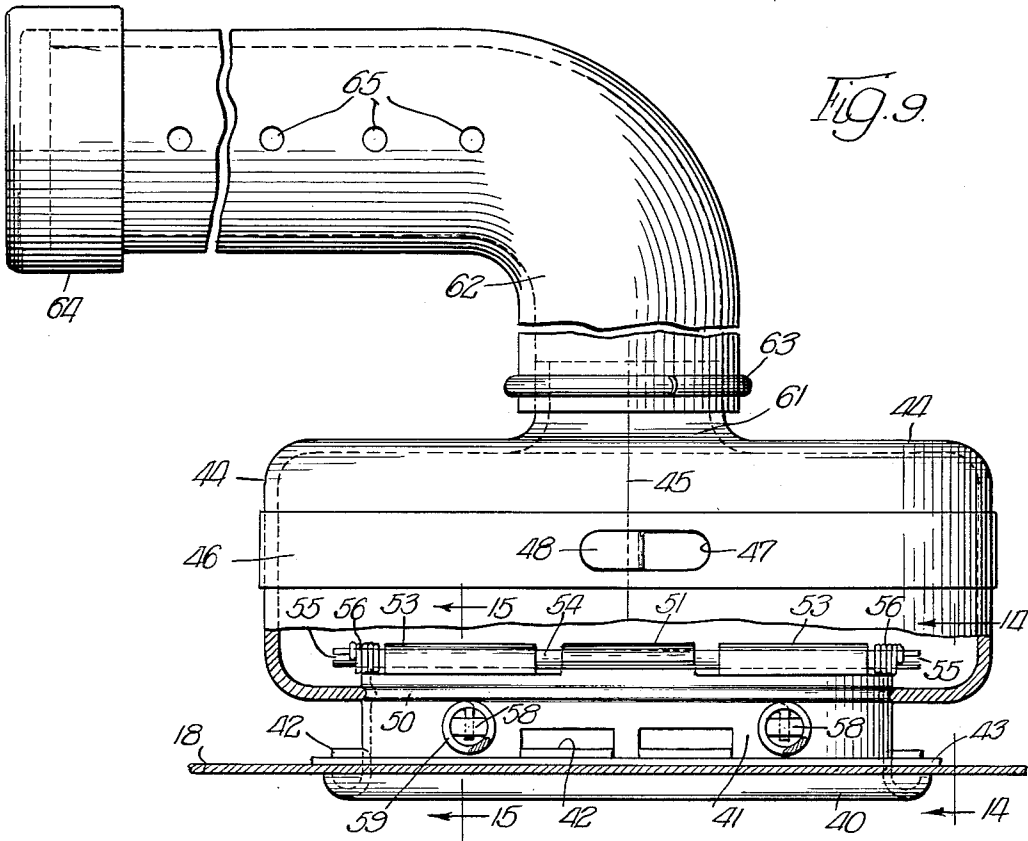


Fig. 9

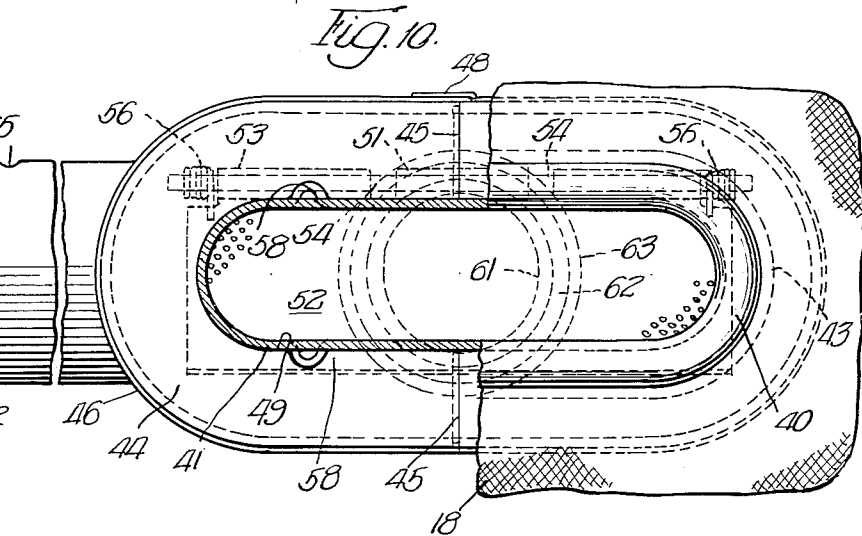
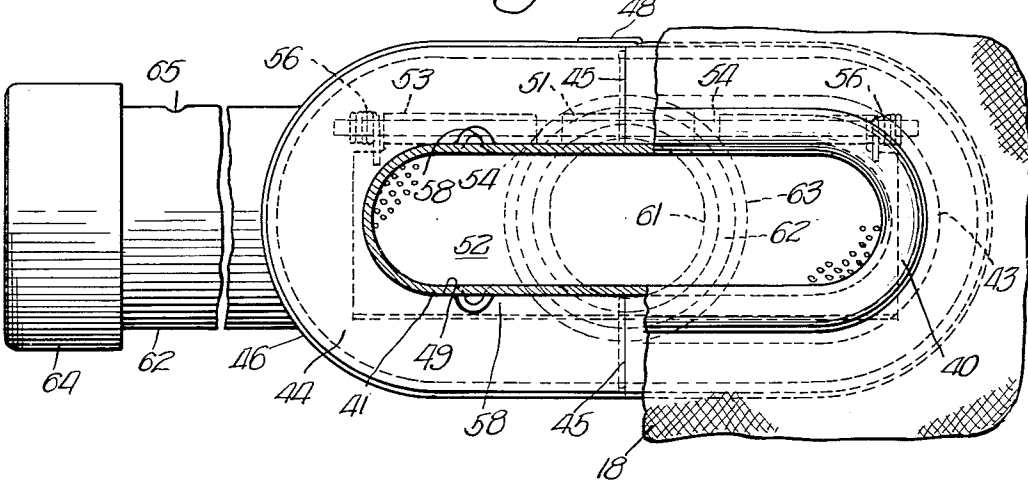


Fig. 10



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3 Sheets-Sheet 3

Fig. 11.

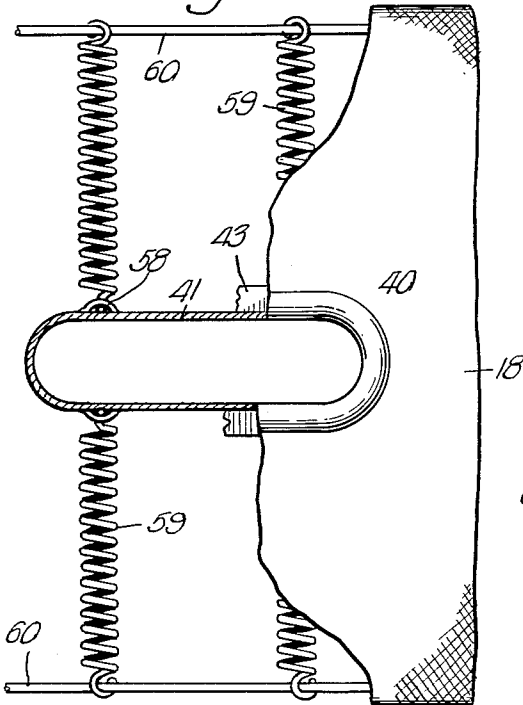


Fig. 12.

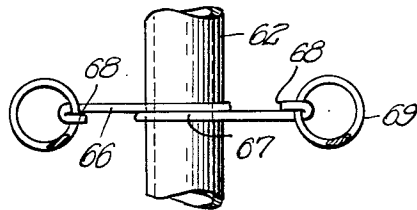


Fig. 13.

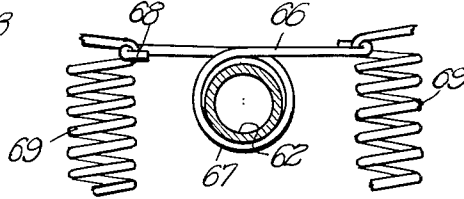
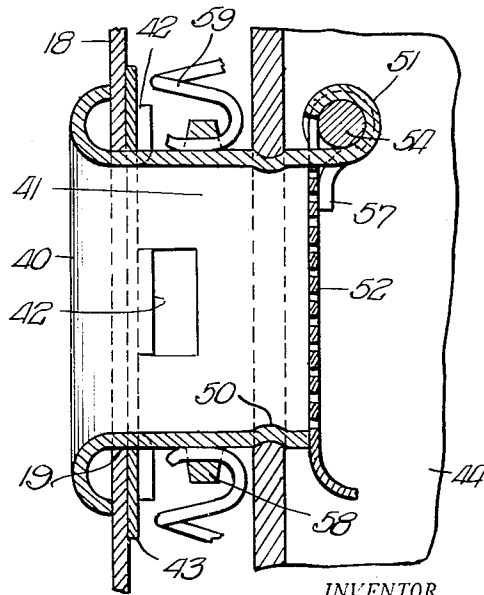
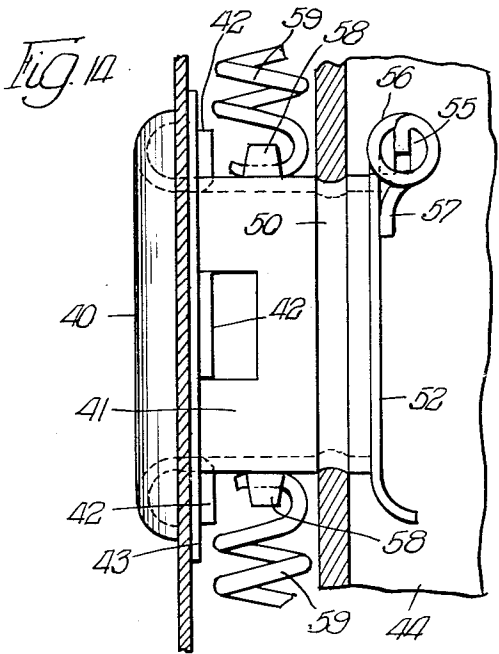


Fig. 15.



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2,712,656

VENTILATING DEVICES FOR MATTRESSES

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Application May 5, 1952, Serial No. 286,051

7 Claims. (Cl. 5—347)

The present invention relates to mattresses and has for its main object the provision of ventilating means whereby the mattress, including the felt thereof, may be periodically aerated and deodorized by means of a suction or blowing engendered by a vacuum machine.

Another object of the present invention is the provision of an opening at the side edge of mattress casing, normally covered by a fabric or a perforated flap, and through which opening the nozzle of an air tube connected with a vacuum machine may be inserted after pushing the flap inwardly of the mattress by the nozzle.

Another object of the present invention is the provision of a suitable frame for engaging the edge of the mattress casing adjacent the opening made therein, through which frame a nozzle of a vacuum machine may be inserted into the mattress casing for drawing air by suction from the mattress casing or blowing air into it in order to aerate, dry and deodorize the mattress.

A still further object of the present invention is the provision of a screen flap hingedly mounted and supported upon the frame aforesaid, with the mechanism for maintaining said flap in a closed relation with the opening bordered by said frame for the purpose of normally maintaining the said opening closed for thereby preventing any dust or insects reaching or settling inside of the mattress.

Another object of the present invention is the provision of a perforated tube suitably supported by one of its ends by the frame aforesaid and having its body suitably supported by the mattress springs, so that when suction or blowing is engendered within said frame the air would be withdrawn from or supplied to the farthest points removed from said frame.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawings forming a part of this application and in which like designating characters refer to corresponding parts throughout the several views;

Fig. 1 is a fragmentary plan view of the side edge of the mattress, illustrating the opening in the side of a mattress, framed by stitches, with a flap covering the opening inwardly of the mattress, the view illustrating the most rudimentary and simple form of the invention;

Fig. 2 is a cross sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a view similar to that of Fig. 1 partly in elevation and partly in section, showing a metallic or plastic frame bordering the opening made in the side of a mattress, with a rigid, perforated flap hingedly connected to the frame for normally closing the opening in the side of a mattress, the view illustrating an advanced form of the invention;

Fig. 4 is a top elevational view of the form of the

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invention illustrated in Fig. 3, when the same remains in an operative position in a mattress;

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

Fig. 6 is an enlarged, elevational end view of the hinge between the frame and the flap, the view having been taken substantially on line 6—6 of Fig. 3;

Fig. 7 is a cross sectional view on line 7—7 of Fig. 3;

Fig. 8 is a cross sectional view through the frame, before the same was rigidly affixed to the mattress casing, the view having been taken on line 8—8 of Fig. 3;

Fig. 9 is a top elevational view, partly in section, of another modification of the present invention, illustrating a frame extended into the mattress, with a housing connecting with the frame, and an air tube connecting with the said housing;

Fig. 10 is the view of the form of the invention illustrated in Fig. 9, partly in section and partly in elevation, looking into the opening in the side of a mattress, and the frame bordering the same;

Fig. 11 is a cross sectional view, partly in elevation, through the tubular frame extension, substantially transversely of the mattress, illustrating the means for supporting the frame by means of springs;

Fig. 12 is a fragmentary top elevational view of the tube of the form of the invention illustrated in Fig. 9, illustrating fasteners connecting with mattress springs for supporting the air tube within the mattress;

Fig. 13 is a cross sectional view through the air tube with the fasteners supporting the same upon the coils of inner mattress springs, the view having been taken substantially 90 degrees from that of Fig. 12;

Fig. 14 is an end elevational view of the frame, the frame extension, and the flap hingedly supported by the frame extension, and means for supporting the assembly in an operative relation with respect to the mattress casing, the view having been taken substantially on line 14—14 of Fig. 9; and

Fig. 15 is a cross sectional view taken on line 15—15 of Fig. 9.

The mattress with which the present invention is adapted to cooperate is usually made in the form of a rectangular casing which is made of cloth. Usually three cloth layers, namely, inner fabric 16, the middle padding 17, and outer prefabricated binding 18, in a superimposed mutual relation, are used in the manufacture of a mattress, as is shown in Fig. 2. For the sake of clarity the mattress casing in other figures is shown as if though made of one sheet of cloth, and will hereinafter be referred to as mattress casing 18.

Referring to the most simple form of the invention illustrated in Figs. 1 and 2, the side of mattress casing 18 is provided with an oblong opening 19, having arcuate ends. In order to stiffen the marginal body portion of mattress casing 18 adjacent said opening 19, washer 20, conforming in contour to the contour of said opening 19, is superimposed upon the marginal body portion of casing 18, adjacent said opening. Thereupon an over-and-over stitch 21 is made by thread and needle around said washer 20 and the marginal body portion of casing 18 covered by said washer 20, as is clearly seen in Fig. 2. Thus said stitching 21 with the body portion of casing 18, adjacent said opening 19, and said washer 20, enclosed therewithin, constitute a frame which encloses said opening 19, and which provides stiffening of the mattress material adjacent said opening, and of course prevents fraying of the material.

A pair of flaps 22 are provided for interchangeably acting in connection with said opening 19 for providing a curtain therefor so as to prevent any dust entering the mattress casing through said opening 19. One of said flaps 22 is sewn by stitches 23 to casing material 18 adjacent one longer edge of said frame 21, while the other

of said flaps 22 is attached by stitches 24 to said casing material 18, adjacent the opposite longer edge of said frame. When the mattress is laid upon a bed by one of its faces, one of said flaps 22 will cover opening 19, while the remaining flap 22 will hang downwardly and out of the path of said opening 19. When the mattress is turned so as to lie upon a bed by its opposite face, then said latter flap 22 will drop down in the path of said opening 19, while the first mentioned flap will hang down and out of the path of said opening 19. By this arrangement one or the other flap 22 will at all times act as a curtain for said opening 19, regardless as to which face is in contact with the bed springs, as is clearly seen in Fig. 2.

Opening 19 is preferably of a contour corresponding to the contour of a nozzle of an air pipe which connects with a vacuum machine, in order that when said nozzle is inserted within said opening 19 it substantially fills the same. In that manner when either suction or pressure is engendered in a vacuum machine no air escapes through the opening and past the said nozzle, in order that a full force may act upon the mattress fabric 18 or all of the multiple layers thereof in order to aerate, dehydrate and deodorize the same in a most efficient manner.

Referring now to the more advanced form of the present invention, illustrated in Figs. 3 to 8, inclusive, the frame for opening 19 made in the mattress casing, is preferably made out of sheet metal or plastic. Said frame includes arcuate lip or bead 25, which, in the operative association of the frame with the mattress casing, will contact and bear against the outer face of said casing. In the pre-formed condition of the frame, the same includes extension 26, which is integrally formed with said bead 25 on its inner edge. Said extension 26 is provided with a plurality of slots 27, which define a plurality of prongs 28. When said bead is superimposed upon the outer face of the edge body portion of mattress casing 18, adjacent said opening 19, the free ends of said prongs 28 will be disposed inwardly of the mattress casing. On placing washer 29 inwardly of the mattress casing, in a contactual relation with the inner face of the body portion of mattress casing 18, adjacent said opening 19, said prongs 28 are then bent in a direction away from the inner edge of the frame, until the free ends of said prongs 28 will come in contact with the adjacent edge of washer 29, as best seen in Figs. 6 and 7. By virtue of this action and arrangement said prongs 28 will clamp said washer 29 and the adjacent contacting portion of the fabric material 18, to the free outer edge of said bead 25. In this manner the frame is effectively attached to the mattress casing 18, for providing a rigid lining for said opening 19.

A pair of said prongs 28, adjacent one longer edge of the frame, are bent into hinge loops 30, for the purpose hereinafter specified.

Co-acting with the said frame is flap 31, made preferably of metal or plastic and provided with a plurality of perforations 32, through which normally air may pass in or out of the mattress casing, but which are not large enough to permit any dust to enter the same.

Made upon one longer edge of said flap 31 are three loops 33, with which said loops 30 cooperate in an alternate staggered relation for receiving hinge rod 34. Thus upon the hinge defined by loops 30 and 33 and rod 34 said flap 31 is adapted for swinging motions inwardly of the mattress casing and towards or away from the frame hereinabove described, lining said opening 19.

The ends of said rod 34 are slotted as at 35 for receiving one end of coil spring 36, one set at each end of said rod 34. The other end of each spring 36 contacts with and bears against the inner face of said flap 31, as at 37. When said springs 36 are under tension the ends thereof bearing against flap 31 urge the latter in contact with the frame for normally maintaining the opening defined by said frame closed.

When a nozzle of an air pipe is inserted inwardly of

the mattress through the said frame flap 31 will be shifted inwardly upon its hinge against the tension of springs 36. The free edge of said flap 31 is inwardly bent for defining lip 38 so that the same may ride upon the nozzle without scratching the same when the nozzle is inserted into or withdrawn from the mattress casing through the said opening.

The adjacent corners of said flap 31 are cut away, as at 39, for accommodating said springs 36.

A further modification of the present invention, illustrated in Figs. 9 to 15, inclusive, has a frame which includes bead 40, corresponding in its construction and action to bead 15 in the former modification of the invention. Said bead 40 overlies the adjacent body portion of the mattress casing 18, and by its outer free edge contacts therewith. Said bead 40 at its inner portion is provided with an integrally formed and inwardly extending tubular member 41. Struck out from the body portion of said tubular member 41, at its portion adjacent said bead 40, is a plurality of lugs 42, which are bent outwardly from the perimeter of said tubular member 41. Interposed between said bead 40 and said lugs 42 is the adjacent marginal body portion of the mattress casing 18 and washer 43, wherein the same are maintained in a clamped relation. By means of this arrangement the frame is maintained in a rigid position with mattress casing 18.

Supported upon the inner end of said tubular member 41 is a metallic or plastic casing made of a pair of complementary sections 44, brought into a mutual contactual relation along line 45. To maintain the two sections 44 in their connected relation a metallic band 46 is provided in an encompassing relation with said sections 44. One end of said band has slot 47. The other end is provided with tongue 48, which is passed through said slot 47, and thereupon bent upon the body portion of the end of said band from which said tongue 48 extends. By virtue of this arrangement band 46 remains in a firmly tied encompassing relation with said sections 44.

Each of said sections 44 adjacent its wall disposed nearest to bead 40 is provided with recess 49, the two recesses 49 in the two sections 44 define a mouth into which tubular member 41 is passed and in which the same rests. So as to make a close fit between said tubular member 41 and said casing 44—44, said tubular member 41 is provided with a circumferential groove 50 on its outer perimeter, into which groove adjacent marginal portion of sections 44 along recesses 49, are adapted to enter.

On its longer edge said tubular member 41 is provided with a central hinge loop 51. Perforated flap 52 has a pair of loops 53 made upon one of its longer edges. Loops 51 and 53 receive rod 54. Thus said loops 51 and 53, in conjunction with said rod 54 constitute a hinge upon which flap 52 is suspended and upon which the same is adapted for swinging motion to or away from the adjacent free end of tubular member 41.

Each end of rod 54 has slot 55 for receiving there-within one end of coil spring 56. The other end of each coil spring 56 bears against the inner face of flap 52, as at 57. Coil springs 56 being under tension, normally urge flap 52 into a contactual relation with the adjacent free end of said tubular member 41.

Intermediately of lugs 42 and said groove 50, said tubular member 41, on its longer sides is provided with a plurality of struck out and outwardly projecting ears 58, each to be engaged by one end of coil spring 59. The opposite ends of several springs 59 are engaged with the adjacent edge wires 60 which are disposed and supported inwardly of the mattress.

Each of said sections 44, on its face disposed opposite of flap 52 is provided with a complementary extension 61, the two extensions, in the operative association of the two sections 44, define a sleeve, over which pipe 62, preferably made of rubber, is fitted. Ring 63 encompassing the end of said pipe 62 which is over said sleeve,

maintains the adjacent end in a rigid engagement with said sleeve.

The opposite end of said pipe is provided with cap 64. Intermediately pipe 62 is provided with a plurality of openings 65 through which air may be sucked from or supplied to the mattress.

Said pipe 62 is supported within the mattress by a plurality of fasteners 66, provided with central loops 67 within which pipe 62 rests. Each end of each fastener 66 is provided with hook 68 for engaging coils 69 of the inner mattress springs.

From the hereinabove description it will be readily apparent that the frame and the tubular member 41 are supported within the opening of the fabric material 18 of the mattress. Springs 59 further support said tubular member 42 against lateral movement. Casing 44 is supported by means of tubular member 41 as well as by pipe 62, the latter being supported by a plurality of fasteners 66.

It will be readily seen that pipe 62 may be as long as desired and may reach as far within the mattress as is desired.

It is also noted that flap 52 remains within the casing defined by sections 44, and a nozzle of an air pipe connecting with a vacuum machine, when inserted through tubular member 41, on pushing flap 52 inwardly of the said casing, enters said casing defined by sections 44.

While there is described herein preferred embodiment of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:

1. In a mattress including a casing, said casing having an opening, a frame affixed to said casing along the marginal portion thereof adjacent said opening, a flap carried by said frame, and tensioning means for normally urging said flap towards said frame for normally closing said opening.

2. In a mattress including a casing, said casing having an opening, a frame affixed to said casing along the marginal portion thereof adjacent said opening, a perforated flap hingedly connected to said frame, and tensioning means for normally urging said flap towards said frame for normally closing said opening, said flap being adapted to open inwardly of the casing against the action of said tensioning means.

3. In a mattress including a casing, said casing being provided with an opening, a frame member overlying the marginal portion of said casing adjacent said opening and outwardly of said casing, a tubular member extending from said frame member inwardly of the casing, means carried by said tubular member for engaging the

marginal portion of said casing adjacent said opening inwardly of the casing for rigidly supporting said frame member and said tubular member with relation to said opening and the mattress casing, a housing supported upon the inner end of said tubular member, a pipe connecting with said housing and extending inwardly of the mattress casing, said pipe being provided with a plurality of openings lengthwise thereof, and means for supporting said pipe by and upon the mattress springs.

4. In a mattress including a casing and mattress springs therewithin, said casing being provided with an opening, a frame member overlying the marginal portion of said casing adjacent said opening and outwardly of said casing, a tubular member extending from said frame member inwardly of the casing, means carried by said tubular member for engaging the marginal portion of said casing adjacent said opening inwardly of the casing for rigidly supporting said frame member and said tubular member with relation to said opening and the mattress casing, a housing supported upon the inner end of said tubular member, the inner end of said tubular member entering said housing, a flap hingedly connected with the inner end of said tubular member for normally maintaining the latter closed, the opposite end of said pipe being sealed, said pipe extending inwardly of the mattress casing, said pipe being provided with a plurality of openings lengthwise thereof, and means for supporting said pipe by and upon the mattress springs.

5. In a mattress including a casing, said casing being provided with an opening, an over-and-over stitching made in the body portion of said casing adjacent said opening, and a closure normally closing said opening.

6. In a mattress including a casing, said casing having an opening, a washer superimposed upon the marginal body portion of said casing adjacent said opening, and an over-and-over stitching made in the said body portion of said casing adjacent said opening, said stitching enclosing said washer.

7. In a mattress including a casing, said casing having an opening, a washer superimposed upon the marginal body portion of said casing adjacent said opening, an over-and-over stitching made in the said body portion of said casing adjacent said opening, said stitching enclosing said washer, and a flap normally closing said opening.

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