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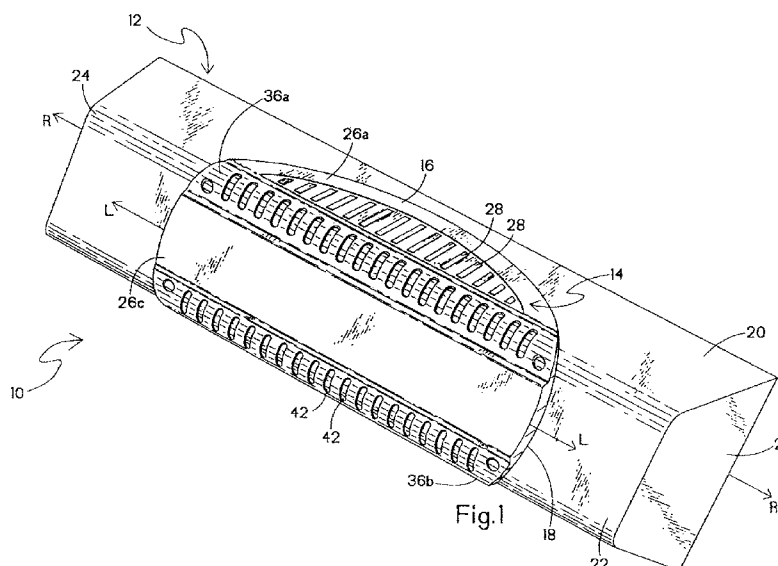
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[Continued on next page]

(54) Title: MAGNETIC INSULATOR PAD FOR CONTAINER



(57) Abstract: An insulator pad (10) for a container (12) includes a flexible body (14) having a first surface (16) and a second, opposite surface (18) for contacting the container, the second surface including at least one recessed portion (32a-c), at least one magnet (30a-c) associated with and disposed in the at least one recessed portion for removably securing the body to the container, and at least one hinge (36a, b) provided on the body, wherein the at least one hinge is configured for bending the body to conform to a shape of the container (12).

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- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

MAGNETIC INSULATOR PAD FOR CONTAINER

FIELD OF THE INVENTION

This invention relates to an insulator pad for containers holding materials such as workable cement and drywall jointing compounds, and more specifically to a magnetic insulator pad for removable attachment to a container.

Joint compound containers, commonly known as "mud pans," are well known in the art by dry wall finishers when joining previously installed wallboard and the joints therebetween. Generally, the mud pan is trapezoidal in shape and comprises a flat bottom, two sloping sidewalls extending upwardly and laterally from the bottom, and two similarly sloping end walls terminating in a planar upper edge.

Current mud pans are generally not shaped to fit a worker's hand and accordingly, the mud pan is difficult for the worker to hold when filled with the joint compound, especially for lengthy working periods. In addition, current mud pans generally have a high polished surface finish that causes the pan to become slippery, especially when wet, and prevents the worker from maintaining a secure grip on the pan. Also, because the worker routinely rotates the pan in a "flipping" action to repeatedly mix the pan contents and prevent the joint compound from settling and hardening, the slipperiness of the pan can cause the worker to lose his grip and drop the pan. Current mud pans also tend to "sweat" when the cooler

temperature joint compound is placed inside of the pan, further adding
25 to the slipperiness of the pan.

Another problem with current mud pans is that the operational life of the pan can be significantly shortened if the pan is dropped due to uneven weight distribution when flipping the pan, the slipperiness of the pan or general hand fatigue of the worker. The
30 severity of damage to the pan can escalate based on numerous factors such as the height and angle of the drop in combination with the weight of the joint compound contained within the pan.

To try and resolve this problem, insulating pads have been developed that are secured to the mud pan to provide a more
35 comfortable and cold temperature resistant platform for the worker's hand. In U.S. Patent Number 6,575,328 to Foraker, an insulating pad is provided that is removably secured to the mud pan by magnetic sheets. Specifically, in Foraker, the insulating pad includes a magnetic material layer attached by adhesive to a foam rubber layer.
40 The magnetic material layer is segmented into three spaced sections to enable the pad to bend to conform to the bottom and sidewalls of the mud pan.

However, a problem found in Foraker is that the adhesive attaching the magnetic and foam layers weakens over time
45 under normal working conditions, causing the magnetic layer to peel away from the foam layer and preventing proper attachment to the pan, requiring replacement of the pad. Another problem in Foraker is that because of the thickness of the insulator pad relative to the magnets, the magnets and adhesive may not be strong enough to
50 securely retain the pad to the mud pan. Also, in Foraker, because of the thickness of the insulator pad, it is rather bulky and can be difficult to store when not in use. Further, the insulator pad in Foraker is preferably manufactured from Neoprene rubber and provides poor

55 traction for the user's hand, causing the pad to become slippery or
difficult to handle after continued use. In addition, in Foraker, the
sides of the insulator pad extend to almost the upper peripheral edge
of the mud pan sidewalls, and accordingly the pad can interfere if joint
compound spills over onto the sides of the mud pan and the worker
must use a taping knife to remove the joint compound. Also, such
60 interference can damage the insulator pad when the worker uses the
taping knife to scrape the joint compound back into the mud pan.

Accordingly, there is a need for an improved magnetic
insulator pad that increases the operational life of the mud pan and
prevents dropping and the corresponding damage to the mud pan.
65 There is a further need for an improved insulator pad for a mud pan
that prevents the magnets from tearing away from the pad and
provides a secure yet removable attachment to the mud pan. There is
also a need for an improved insulator pad for a mud pan that is thick
enough to provide temperature insulation between the joint compound
70 and/or the pan and the worker's hand, but thin enough to provide a
secure attachment to the pan that is comfortable to the user. Further,
there is a need for an improved insulator pad that is easy to store
when not in use. Finally, there is a need for an improved insulator pad
that does not interfere with the taping knife or the mud pan when the
75 worker is cleaning the side of the pan while applying the joint
compound.

BRIEF DESCRIPTION OF THE INVENTION

80 The above-listed objects are met or exceeded by the
present invention that is configured for increasing the operational life
of the mud pan by preventing damage to the mud pan caused by
inadvertent dropping. The present insulator pad for a container

includes at least one magnet that is more securely adhered to the insulator pad than a conventional pad. The present insulator pad is
85 also thinner than a conventional pad and provides a secure attachment to the container while preventing relative temperature transfer between the container and/or the joint compound and the worker's hand. Further, the present insulator pad is easy to store when not in use and is less bulky than a prior insulator pad. Also, the
90 present insulator pad includes a more positive gripping surface that prevents the worker's hand from slipping after continued work. Finally, the present insulator pad is arranged on the container to prevent interference with the taping knife during use.

More specifically, an insulator pad for a container
95 includes a flexible body having a first surface and a second, opposite surface for contacting the container, the second surface including at least one recessed portion, at least one magnet associated with and disposed in the at least one recessed portion for removably securing the body to the container, and at least one hinge provided on the body,
100 wherein the at least one hinge is configured for allowing the body to bend to conform to a shape of the container.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 is a perspective view of the present insulator pad attached to a container;

FIG. 1a is an end view of the present insulator pad attached to the container;

FIG. 2 is an overhead plan view of the insulator pad of FIG. 1 shown in a flattened position;

FIG. 3 is a bottom view of the insulator pad of FIG. 2;

FIG. 4 is a fragmentary cross-section taken along the line 4-4 of FIG. 3 and in the direction indicated;

FIG. 4a is a fragmentary enlarged portion of the encircled portion of FIG. 4;

FIG. 5 is an overhead plan view of an alternate embodiment of the insulator pad of FIG. 2; and

FIG. 6 is an overhead plan view of the insulator pad of FIG. 3 in a folded configuration.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIGs. 1-3, an insulator pad for a container is provided and generally designated 10. The insulator pad
105 10 is constructed and arranged for attachment to a container 12, typically a mud pan, however other containers are contemplated. Included on the pad 10 is a flexible body 14 having a first, outer surface 16 and a second, opposite surface 18 for contacting the container 12. As known in the art, the container 12 includes two
110 opposing sidewall surfaces 20 and two opposing endwall surfaces 21 joined together at a bottom surface 22 to form a generally trapezoidal container having preferably rounded corners 24, however other configurations are contemplated.

Preferably, the body 14 is manufactured from silicone to
115 provide a durable and resilient body that can also insulate a worker's hand from relative extreme temperatures of the container and/or its contents. Specifically, it is contemplated that the silicone body insulates against both hot and cold temperatures. For example, because joint compound is generally cold in temperature and can
120 cause the container to become cold, the silicone body 14 is configured for providing insulation to the worker's hand from the cold temperature. Also, when the container 12 is stored in the worker's vehicle or left

outside on an extremely hot day, the container can become too hot for the worker to comfortably handle. Accordingly, it is contemplated that
125 the silicone body 14 also insulates the worker's hand from extremely hot temperatures. Further still, the silicone body 14 is configured for preventing transfer of the heat from the worker's hand through the container and to the joint compound, causing the compound to prematurely set.

130 Preferably still, the body 14 is manufactured from silicone provided by DC Dongjue Silicone Group Co. Ltd. (model no. NE-5140) in Nan Jin, China. It is contemplated that manufacturing the body 14 from silicone will provide a thinner and more temperature resistant insulator pad than the prior art pad, allowing the worker to
135 more comfortably hold the pad 10 for longer periods of time. It is further contemplated that the silicone body 14 provides a more durable pad than the prior art pad, increasing the operational life of the pad and preventing dropping of the pan and the resulting damage. Also, it is contemplated that the silicone body 14 is more flexible than the prior
140 art insulating pad, and that because of its thin profile, can be folded as shown in FIG. 6 and easily transported in the worker's pocket. Further, it is contemplated that the silicone body 14 provides a relatively positive gripping surface, preventing dropping of the pan and increasing user comfort. However, it is recognized that other materials
145 with similar durability and temperature-resistant properties may be suitable, as known in the art.

The body 14 is preferably integral, disk shaped and generally planar, with an approximate 8-inch (20.32cm) diameter, as shown in FIGs. 1-3. However, it is appreciated that other shapes and
150 sizes may be suitable, as will be described in further detail below. Regardless of its shape, the body 14 is preferably approximately .04-.12 inches (1-3mm) thick with a weight of approximately 3-6 ounces

155 (.09-.17kg). More preferably, the body 14 is approximately .09 inches
(2.4mm) thick with a weight of 4.9 ounces (.14kg), which is less than
1/3 the thickness and about 2/3 the weight of the insulating pad in
Foraker. It is contemplated that this construction provides a more
flexible, durable and comfortable pad than that disclosed in Foraker.

160 As shown in FIG. 2, the first, outer surface 16 includes a
first panel 26a, a second panel 26b and a third panel 26c. The first
and second panels 26a, 26b are preferably semi-circular in shape and
located at opposite ends of the first surface 16. Preferably still, the
third panel 26c is generally centrally located on the first surface 16 and
is generally rectangular in shape. However, it is contemplated that
alternate configurations may be appropriate, depending on the
165 application.

When the pad 10 is secured to the container 12, the first
and second panels 26a, 26b, only cover approximately 1/3 of the
corresponding sidewall 20, although other dimensions may be
suitable. It is contemplated that because of the shape of the body 14
170 and the panels 26a, 26b with respect to that of the sidewalls 20, the
pad 10 will not extend near the container edge and as such will not
interfere with the taping knife if joint compound spills onto the
container sidewalls. Thus, the worker is able to more easily scrape
the compound back into the pan 12.

175 To prevent slippage during continued use of the
insulating pad 10 releasably affixed to the container 12, the first, outer
surface 16 is preferably textured to provide a more secure gripping
surface for the worker's hand. Gripping is further enhanced by the first
and second panels 26a, 26b preferably including a plurality of ribs 28.
180 As seen in FIG. 2, the ribs 28 are generally rectangular in shape,
although it is recognized that other shapes may be suitable. It is
contemplated that providing a textured surface and the ribs 28 also

increases user comfort because there is less slippage between the user's hand and the first surface 16.

185 Referring to FIGs. 3 and 4, the insulator pad 10 further includes a first magnet 30a, a second magnet 30b and a third magnet 30c associated with and disposed on the body second surface 18 for removably securing the pad to the container 12. Preferably, the magnets 30a-30c are manufactured by DC Dongguan Maghard
190 Flexible Magnet Co., Ltd. (Model Nos. 0602-O001-00 and 0602-O002-00) in Dong Guan, China. Preferably still, the magnets 30a-30c are approximately .04-.12 inches (1-3mm) thick, and most preferably are approximately .06 inches (1.4mm) thick, although it is appreciated that other thicknesses may be appropriate, depending on the application.
195 It is further preferred that corners of the magnets 30a-30c include radiused corners 31 (FIG. 3), enabling a more secure adhesion to the body second surface 18. The magnets 30a-30c are preferably flexible sheets, enabling bending of the pad 10 and increasing the durability and flexibility of the pad.

200 As shown in FIGs. 3 and 4, the body second surface 18 includes recessed portions 32a, 32b, and 32c corresponding to the panels 26a, 26b and 26c. The recessed portions 32a-32c are constructed and arranged for receiving and securely retaining corresponding magnets 30a, 30b and 30c. Further, by providing the
205 recessed portions 32a-32c, it is contemplated that the thickness of the body 14 is significantly reduced, reducing the weight of the pad 10 and increasing its flexibility. It is contemplated that the body 14 is only thick enough to provide a positive gripping surface, to insulate the worker's hand from cold temperatures, and to securely hold the
210 magnet. Accordingly, in the pad 10, use of excess or unnecessary material is avoided.

Preferably, the first and second magnets 30a, 30b are generally semi-circular in shape and are arranged at opposing outer edges of the body 14. Preferably still, the third magnet 30c is
215 generally rectangular in shape and is generally centrally arranged on the body 14. It is contemplated that the recessed portions 32a-32c are shaped to correspond with the magnets 30a-30c, respectively. However, it is recognized that other configurations of the magnets 30a-30c may be appropriate.

220 Preferably and as seen in FIG. 4, the body 14 is no more than twice as thick as the magnets 30a, 30b and 30c. It is contemplated that this construction provides insulation to the worker's hand, structural support to the magnets 30a-30c, and prevents bulkiness or excessive weight of the pad 10.

225 To secure the magnets 30a-30c into their respective recessed portions 32a-32c, an adhesive process is preferably used. Specifically, and as depicted in FIG. 4a, a surface active treatment (not shown), such as that manufactured by Yih Chou Engineering Co. Ltd. (model no. SP-616) in Guang Zhou, China, is applied to the
230 recessed portions 32a-32c. The surface active treatment is configured for neutralizing the silicone body's mold release agent. A strip of double-sided tape 34, such as that manufactured by Sekisui (model no. 5760, www.sekisui.com.hk), in Osaka, Japan, shaped to fit within each of the recessed portions 32a-32c, is then placed over the treated
235 recessed portion. Finally, the magnets 30a-30c are placed over their respective strips of tape 34, and pressure is applied. It is contemplated that by applying the surface active treatment to the silicone body 14, the silicone's mold release agent is neutralized, providing a more secure bond between the body and the adhesive,
240 preventing the magnets 30a-30c from tearing away from the recessed portions 32a-32c, and increasing the usage life of the insulating pad

10. However, it is appreciated that other adhesion processes may be suitable, depending on the application. It is also appreciated that the above-described adhesion process may be suitable for other
245 applications not limited to the drywall field, such as the housewares industry for silicone products (i.e., for oven mitts) and the automotive industry (i.e., for magnetic silicone fender covers).

As shown in FIGs. 2 and 3, the insulator pad 10 further includes a pair of hinges 36a, 36b separating the third magnet 30c
250 from each of the first and second magnets 30a, 30b, respectively. Preferably and as seen in FIG. 4, upon insertion of each of the magnets 30a, 30b, and 30c into the corresponding recessed portion 32a, 32b and 32c, a magnet gripping surface 38 of each of the magnets is oriented coplanar with a hinge gripping surface 40 of each
255 of the hinges 36a, 36b. It is contemplated that this arrangement provides an even gripping surface and a more secure attachment to the container sidewalls 20 and the bottom 22.

Each of the hinges 36a, 36b is preferably a flexible web including a plurality of cutouts 42 arranged generally in spaced parallel
260 relationship to each other. It is contemplated that by providing the hinges 36a, 36b as a flexible web, the insulator pad 10 can be used on different sizes of mud pans 12 without the need to purchase a new pad. The cutouts 42 are preferably oval in shape and permit flexible adjustment of the body 14 along the hinges 36a, 36b to allow
265 attachment of the pad 10 to differing sizes of containers/mud pans. However, it is recognized that other cutout configurations may be suitable, depending on the application.

Referring now to FIGs. 3 and 4, each of the hinges 36a, 36b includes two rows of ridges 44a, 44b projecting from the body
270 second surface 18 and arranged generally parallel to each other. Preferably, the first row of ridges 44a is constructed and arranged for

gripping the pan bottom 22, and the second row of ridges 44b is constructed and arranged for gripping the pan sidewall 20. The first and second rows of ridges 44a, 44b are preferably arranged generally perpendicular to the cutouts 42, although it is appreciated that other configurations may be appropriate. Preferably still, the first and second rows of ridges 44a, 44b are located within an area defined by axial ends of the cutouts 42.

Best shown in FIG. 4, the first and second rows of ridges 44a, 44b are preferably arranged at an approximately equal height to ensure consistent gripping of the container sidewalls 20 and bottom 22. The first and second rows of ridges 44a, 44b each preferably have a generally pointed distal end 46 for gripping the container 12, although it is contemplated that other configurations may be suitable, depending on the application. Further, the first row of ridges 44a and the second row of ridges 44b form a trough 48 therebetween. Preferably, the trough 48 is constructed and arranged for bending and accommodating the corresponding container corners 24 (See FIG. 1A).

An alternate embodiment of the insulator pad is illustrated in FIG. 5 and is generally designated 50. Shared components of the pad 10 and the pad 50 are designated with identical reference numbers. The pad 50 includes a body 52 having a first, outer surface 54 and a second surface 56 configured for contacting the container 12. The body 52 is preferably oval in shape with rounded ends 58 and straight edges 60 connecting the ends. Similar to the pad 10, the outer surface 54 of the pad 50 includes a first panel 62a, a second panel 62b and a third panel 62c, where the first and second panels are arranged at opposite ends of the pad and the third panel is generally centrally located on the pad. The first and

second panels 62a, 62b include the ribs 28, providing a positive gripping surface for the worker's hand.

305 The pad 50 further includes the hinges 36a, 36b, each of which are arranged to separate the third panel 62c from the first and second panels 62a, 62b. The construction of the second surface 56 is the same as that of the second surface 18, except that the magnets and corresponding recessed portions (not shown) are shaped to conform with the shape of the panels 62a-62c. It is contemplated that when secured to the container 12, the pad 50 does not extend as high
310 up the sidewalls 20 as the pad 10, further preventing the pad from interfering if joint compound spills onto the sidewalls and the worker must use a taping knife to remove the compound.

To use the insulator pad 10 with the container 12, the worker aligns a longitudinal axis "L" of the third magnet 30c with a
315 longitudinal axis "R" of the container bottom 22 (FIG. 1). The worker then secures the insulator pad 10 to the container 12 by pressing the third magnet 30c to the container bottom, and bending the pad 10 at hinges 36a, 36b, such that the first and second magnets 30a, 30b are secured to corresponding container sidewalls 20. After use, the pad
320 10 can be easily removed. It is contemplated that when the pad 10 is not in use on the container 12, it can be easily stored by folding the pad at hinges 36a, 36b such that the first and second magnets 30a, 30b overlap each other and are arranged on top of the third magnet 30c (FIG. 6). In this configuration, the magnets 30a-30c are
325 magnetically attached to each other and the pad 10 is flat enough to fit within the worker's pocket. This is a contemplated advantage over current insulator pads, which can be bulky and difficult to store when not in use.

330 While a particular embodiment of a magnetic insulator pad for a container has been shown and described, it will be

appreciated by those skilled in the art that changes and modifications may be made thereto without departing from the invention in its broader aspects and as set forth in the following claims.

What is claimed is:

1. An insulator pad (10) for a container (12),
comprising:
a flexible body (14) having a first surface (16) and a
second, opposite surface (18) for contacting the container, said
5 second surface including at least one recessed portion (32a-c);
at least one magnet (30a-c) associated with and
disposed in said at least one recessed portion for removably securing
said body to the container; and
at least one hinge (36a,b) provided on said body,
10 wherein said at least one hinge is configured for bending said body to
conform to a shape of the container.
2. The insulator pad of claim 1 wherein said body
(14) is manufactured from silicone.
3. The insulator pad of claim 1 wherein said body
(14) is no more than twice as thick as said at least one magnet.
4. The insulator pad of claim 1 wherein said at least
one magnet (30a-c) includes a first magnet (30a), a second magnet
(30b) and a third magnet (30c), wherein said first and second magnets
are generally semi-circular in shape.
5. The insulator pad of claim 1 wherein said at least
one hinge (36a,b) is a pair of hinges.

6. The insulator pad of claim 4 wherein said at least one hinge (36a,b) is a pair of hinges, said hinges separating said third magnet (30c) from each of said first and second magnets (30a,b).

7. The insulator pad of claim 4 wherein upon insertion of each of said first, second and third magnets (30a-c) into a corresponding one of said recessed portions (32a-c), a gripping surface (38) of each said magnet is coplanar with a gripping surface (40) of each of said hinges.

8. The insulator pad of claim 1 further including two rows of ridges (44a, 44b) projecting from said body second surface (18) and arranged generally parallel to each other, wherein a first row of ridges is constructed and arranged for gripping a bottom (22) of the container, and a second row of ridges is constructed and arranged for gripping a sidewall (20) of the container.

9. The insulator pad of claim 1 wherein each said hinge (36a,b) is a flexible web including a plurality of cutouts (42) arranged generally in spaced parallel relationship to each other.

10. The insulator pad of claim 9 wherein each said hinge (36a,b) further includes at least one row of ridges (44a,b) projecting from said body second surface (18) and arranged generally perpendicular to said cutouts (42) and configured for gripping the container (12).

11. The insulator pad of claim 1 further including two rows of ridges (44a,b) projecting from said body second surface (18) and arranged generally parallel to each other, wherein a first row of

5 ridges (44a) is constructed and arranged for gripping a bottom (22) of the container (12), and a second row of ridges (44b) is constructed and arranged for gripping a sidewall (20) of the container.

12. The insulator pad of claim 11 wherein said first row of said ridges and said second row of said ridges form a trough (48) therebetween.

13. The insulator pad of claim 12 wherein said trough (48) is constructed and arranged for bending and accommodating a corner (24) of the container.

14. The insulator pad of claim 11 wherein said first and second rows of ridges (44a,b) each have a generally pointed distal end (46).

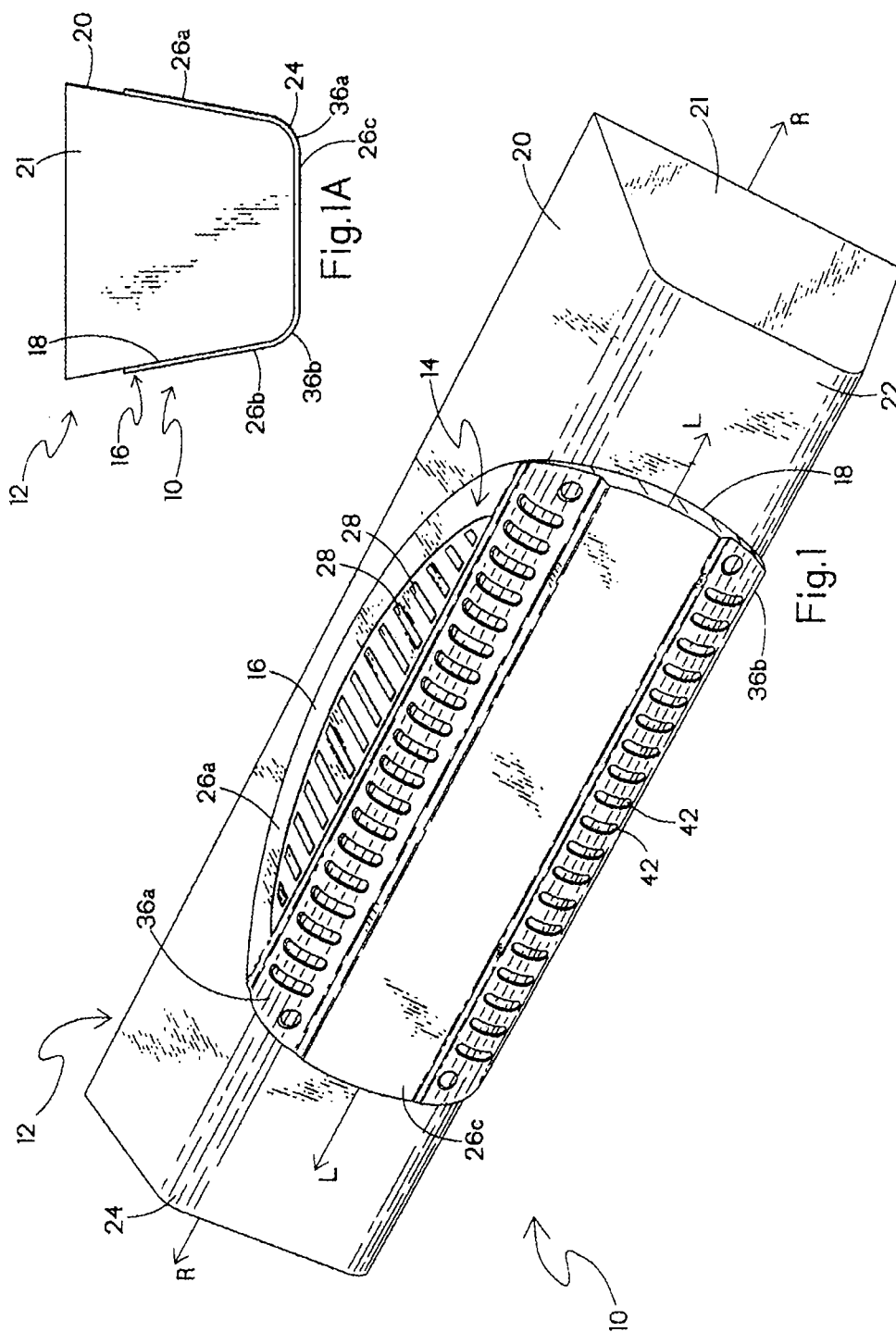
15. The insulator pad of claim 11 wherein said first and second rows of ridges (44a,b) are arranged at an approximately equal height.

5 16. The insulator pad of claim 11 wherein each said hinge (36a,b) includes a plurality of cutouts (42) arranged generally perpendicular to said first and second rows of ridges (44a,b), wherein said first and second rows of ridges are located within an area defined by axial ends of said cutouts.

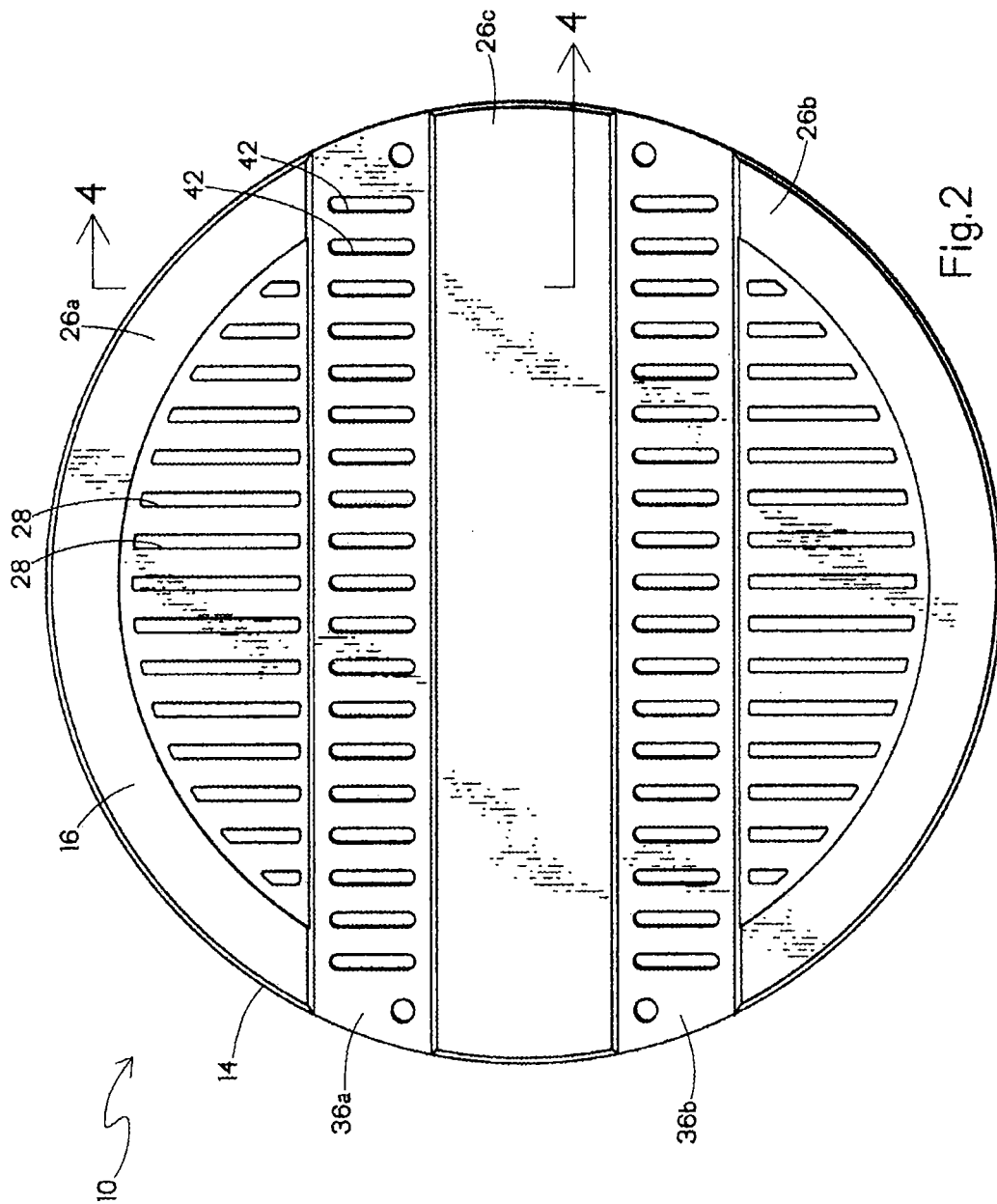
17. A process for adhering at least one flexible magnet to a silicone body having a first, outer surface and a second surface, the process comprising the steps of:

- 5 applying a surface active treatment to the at least one
recessed portion to neutralize a mold release agent of the silicone
body;
 placing a strip of adhesive over said recessed portion;
and
 adhering the magnet to said strip of adhesive.

1/5



2/5



3/5

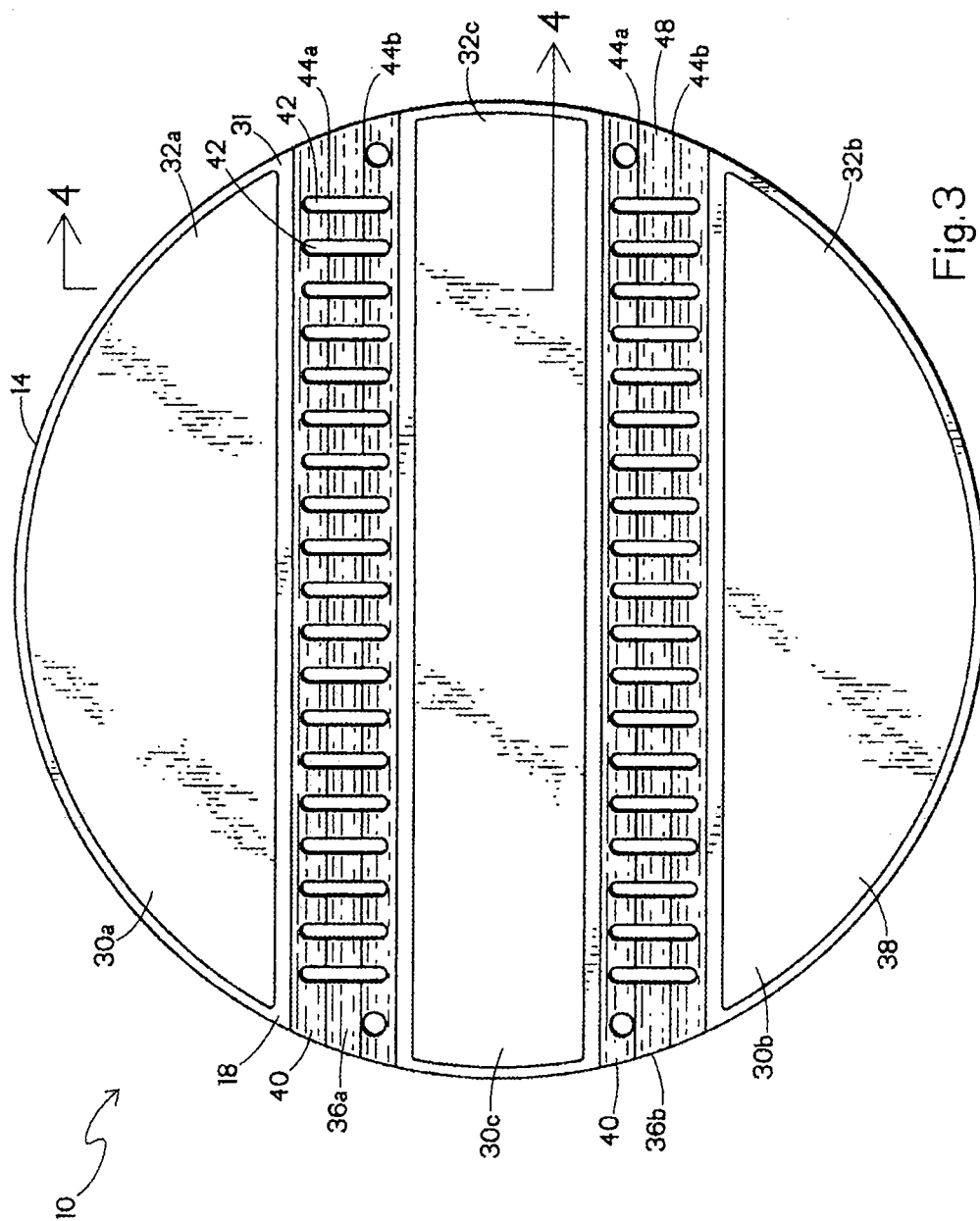
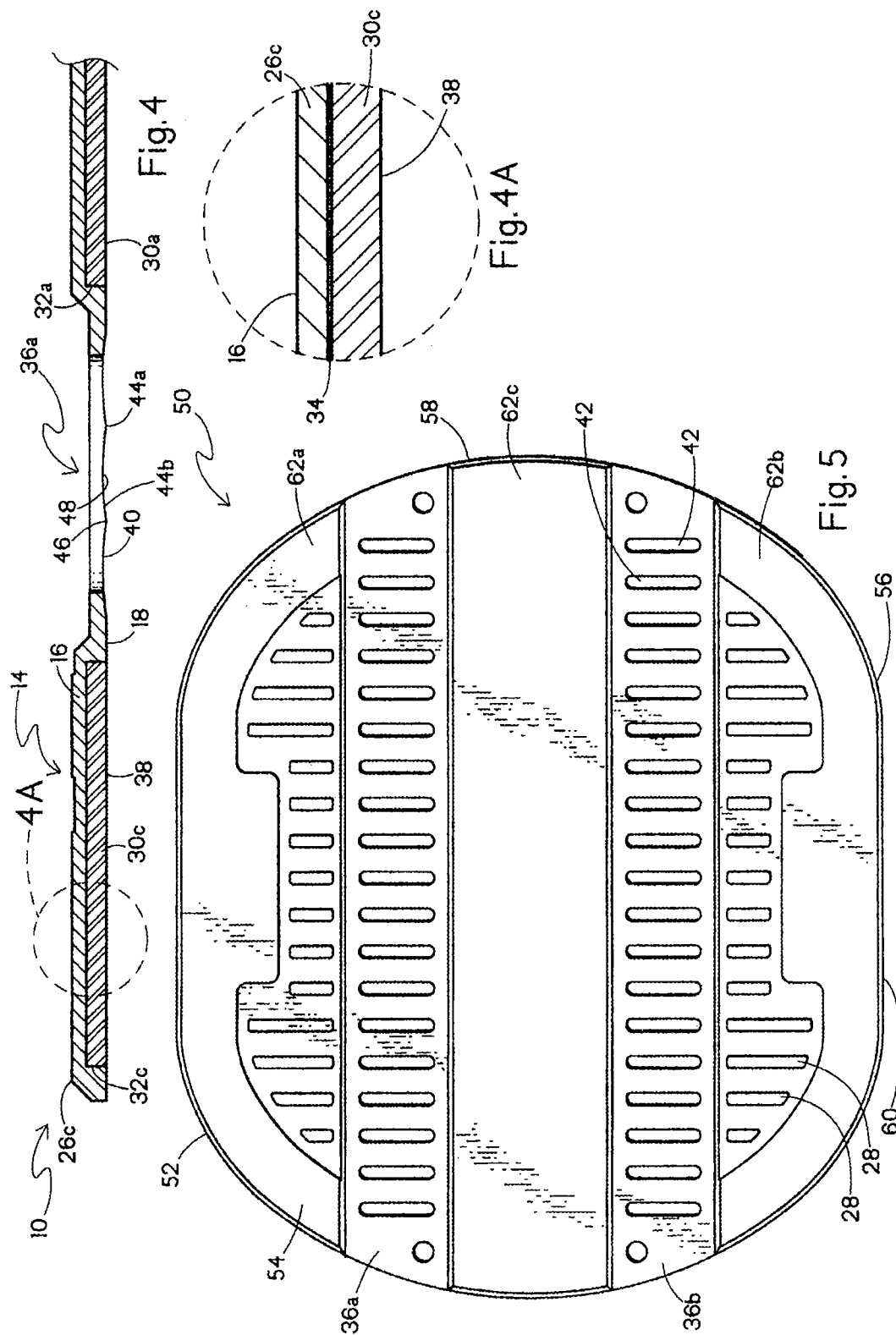
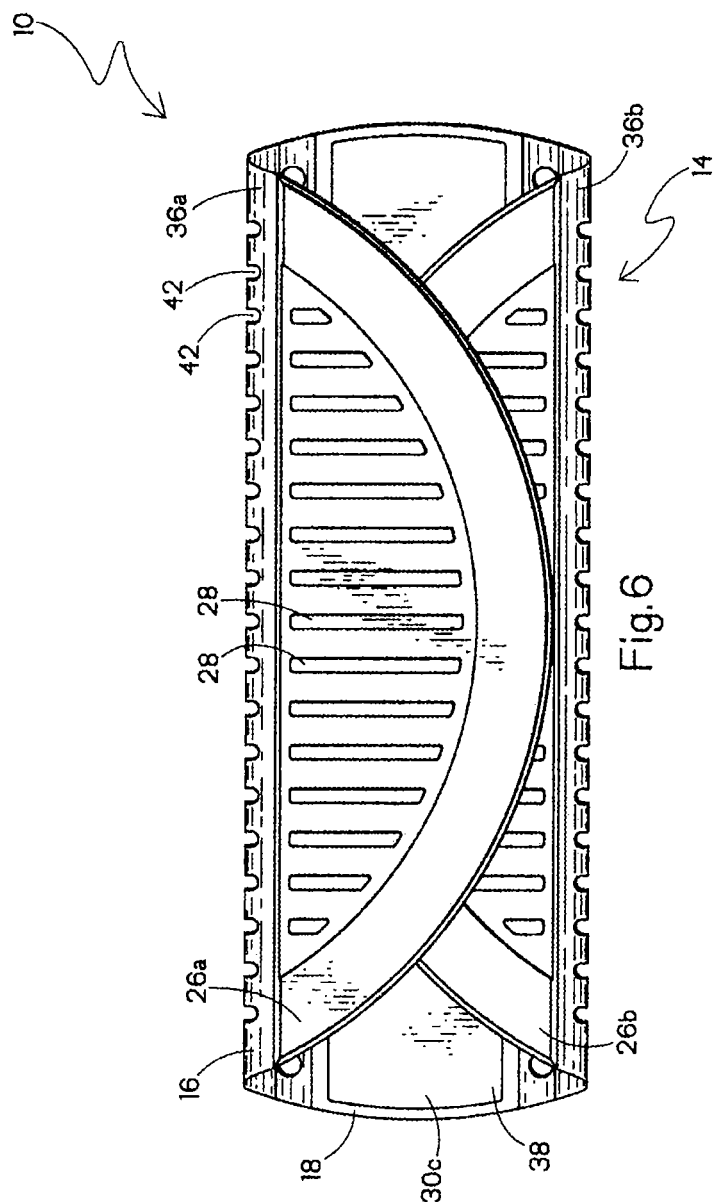


Fig. 3

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/053291

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E04F 21/00,06 (2008.04)

USPC - 206/218; 220/23.91,592.24,739,907

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - E04F 21/00,06 (2008.04)

USPC - 206/218; 220/23.91,592.24,739,907

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO EAST System (US, USPG-PUB, EPO, DERWENT), MicroPatent.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,575,328 B1 (FORAKER) 10 June 2003 (10.06.2003) entire document	1-17
Y	US 2005/0006547 A1 (EXLER) 13 January 2005 (13.01.2005) entire document	1-17
Y	US 2006/0169860 A1 (ALTHEIMER) 03 August 2006 (03.08.2006) entire document	2
Y	US 5,950,917 A (SMITH) 14 September 1999 (14.09.1999) entire document	9, 10
Y	US 5,960,984 A (WESTON) 05 October 1999 (05.10.1999) entire document	11-15
Y	US 6,364,151 B1 (GALE) 02 April 2002 (02.04.2002) entire document	16
Y	US 4,402,314 A GOODE 06 September 1983 (06.09.1983) entire document	17

☐ Further documents are listed in the continuation of Box C.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search

16 June 2008

Date of mailing of the international search report

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