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[21] Appl. No. **811,783**
[22] Filed **Apr. 1, 1969**
[45] Patented **Jan. 11, 1972**

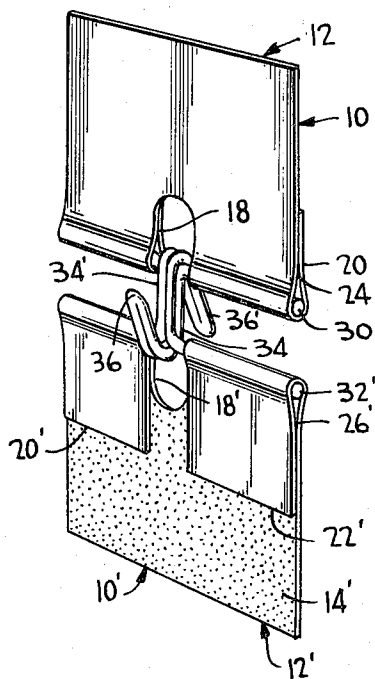
[56] **References Cited**
UNITED STATES PATENTS
3,239,179 3/1966 Margulis..... 248/205
3,241,795 3/1966 Frye..... 248/205 X
1,814,303 7/1931 Finlay..... 248/205 A
2,724,568 11/1955 Rabinovitch..... 248/467

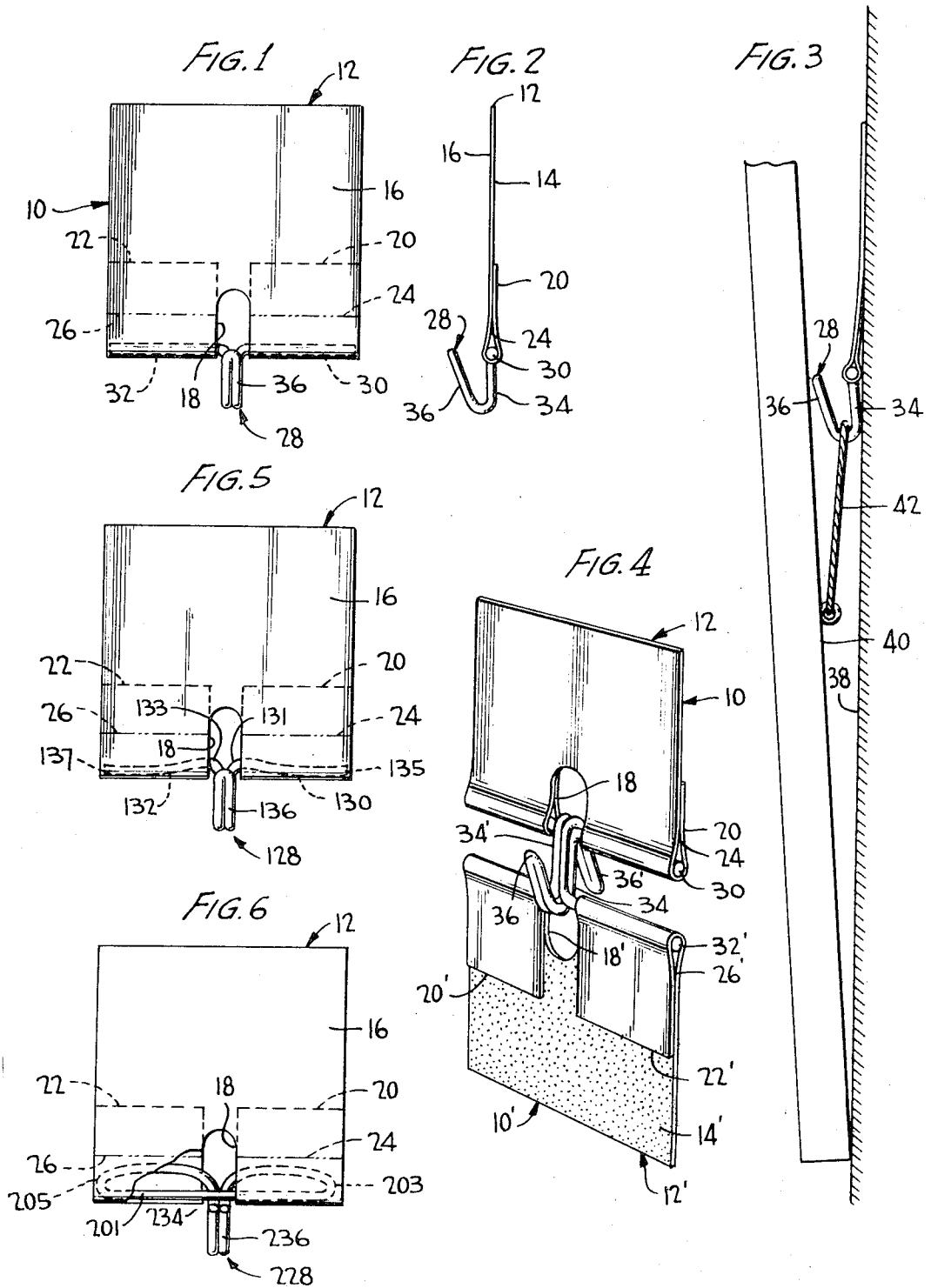
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[54] **ADHESIVE HANGER**
14 Claims, 6 Drawing Figs.

[52] U.S. Cl..... 248/467
[51] Int. Cl..... A47f 7/14
[50] Field of Search..... 248/205 A,
467, 479, 486; 24/67 A

ABSTRACT: Adhesive hangers having a bifurcated paper backing forming a pair of folded legs with a slot therebetween, a water soluble adhesive coated on the backing, and a hook member formed from a single length of wire bent to form a pair of arms supported in the legs, a shank connected with the arms and a hook angularly bent from the shank.





ADHESIVE HANGER

BACKGROUND OF THE INVENTION

The present invention pertains to hangers and more particularly to adhesive hangers for supporting objects on a flat surface without the use of nails.

Many attempts have been made in the past to provide hangers which may be secured to a wall without nails to avoid making holes in walls, cracking plaster or otherwise damaging walls. Such hangers have also been sought in order to permit the hanging of objects on fragile surfaces, such as marble, glass or tile, which would be irreparably injured by conventional hangers using nails. None of the prior conventional adhesive hangers have proved commercially successful due to their many disadvantages; some of the primary disadvantages being their inability to support objects heavier than 15 pounds, their inoperativeness with surfaces of glass, tile or water base paints, and the difficulty in removal of the hangers from the surface after their usefulness has terminated.

In order to remove most conventional adhesive hangers from a surface they are moistened with water, and the adhesive cloth backing is stripped or peeled from the wall. The damage caused by removal in this manner is precisely that caused by nails and sought to be avoided by the hangers. That is, when the adhesive backing is stripped from the surface it causes the cracking of plaster and peeling and flaking of paint, paper, and wallboard and thus the advantages over nail hangers obtained upon the initial installation of the hanger are obviated.

Conventional adhesive hangers have a loosely woven cloth backing which is easily torn and cannot withstand much stress, and this backing is formed by folding a strip of cloth having a water-activated adhesive coating upon itself to form a top flap and a smaller bottom flap separated by the fold. The fold is utilized to support a metal hook member which may have a variety of shapes such as the hook-and-eye configurations shown in U.S. Pat. Nos. 2,647,711, 2,809,001 and 3,079,177 to Margulis which are secured to a support bar disposed in the fold, and the wide shank hooks shown in U.S. Pat. No. 2,724,568 to Rabinovitch which have laterally extending arms disposed in the fold. Conventional adhesive hangers such as those described above and shown in the patents are limited to their load carrying ability because of the tendency of the flat metal hook members to cut through the fold with slight vibrations due to their sharp bearing points and because of their stable nonpivotal positions which do not permit the force of the load to be diametrically opposed.

Many conventional adhesive hangers are utilized to interlock with one another to permit one hanger to be secured to the object and the other to a wall whereby the object may be hung without wires; however, the stability of conventional adhesive hangers when used in their interlocking modes is insufficient to permit the hanging of objects of value due to the insertion of the hook of one hanger in an opening formed either in the shank or support member of the other member which permits twisting and pivoting of the object. It is believed that the instability is caused by the minimum contact of interlocking surfaces and by the reliance on the hook member, which is movable, for stability rather than the backing.

SUMMARY OF THE PRESENT INVENTION

Accordingly, it is an object of the present invention to utilize a paper backing with an adhesive hanger to permit easy and safe removal of the hanger.

Another object of the present invention is to utilize a wire hook member with an adhesive hanger such that the hook member can rotate to diametrically oppose the force of the object to be supported.

A further object of the present invention is to dispose a hook member a distance below the backing in an adhesive hanger to reduce the tendency for the hanger to be peeled from the wall by orienting the forces from the object to be supported in a shearing plane.

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The present invention has another object in that a curved wire hook member is utilized in an adhesive hanger to prevent tearing of the backing under large loads and to dynamically alter the curved supporting surface of the hook member within a fold in the backing.

Another object of the present invention is to utilize a wire hook member having a configuration that changes with respect to the load in order to prevent concentrated wear on an adhesive hanger and to support greater loads.

A further object of the present invention is to construct an adhesive hanger with a paper backing that may be disintegrated by rubbing with water to remove the hanger from a surface without damage to the surface.

The present invention has another object in that an adhesive hanger has a bifurcated paper backing with a water soluble adhesive coating thereon, which backing has folded legs for supporting a wire hook member.

Another object of the present invention is to construct adhesive hangers such that they may be interlocked to support an object without wires by securing one adhesive hanger to the object and another adhesive hanger to a surface on which the object is to be hung.

A further object of the present invention is to construct an adhesive hanger having a pair of double-thickness folded legs separated by a slot having an arcuate upper edge and a length less than the length of the legs to reduce tearing tendency and to facilitate manufacture.

Some of the advantages of an adhesive hanger constructed in accordance with the present invention over prior conventional adhesive hangers are that the hanger may be removed from a surface after use with ease and without damage to the surface, that relatively heavy objects may be safely supported by the hanger and that the hanger may be easily and inexpensively manufactured due to the use of a bifurcated paper backing and a wire hook member.

The present invention is generally characterized in an adhesive hanger comprising a bifurcated paper backing folded upon itself to form first and second legs separated by a slot, a coating of water-soluble adhesive on the backing, and a hook member having support means supported by the first and second legs and angular hook means connected with the support means at the slot.

Other objects and advantages of the present invention will become apparent from the following description of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation of a first embodiment of an adhesive hanger according to the present invention.

FIG. 2 is a side elevation of the adhesive hanger of FIG. 1. FIG. 3 is a side elevation of the adhesive hanger of FIG. 1 supporting an object on a wall.

FIG. 4 is a perspective view of two of the adhesive hangers of FIG. 1 in interlocking relationship.

FIG. 5 is a front elevation of a second embodiment of an adhesive hanger according to the present invention.

FIG. 6 is a front elevation of a third embodiment of an adhesive hanger according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A first embodiment of an adhesive hanger 10 according to the present invention is illustrated in front and side elevation in FIGS. 1 and 2, respectively, and includes a backing 12 having an interior surface 14 and an exterior surface 16. Backing 12 consists of a rectangular piece of paper that has one end cut to provide a slot 18 centrally separating a pair of legs 20 and 22. Backing 12 may be given any desirable configuration with the realization that the points in a crown or sawtooth configuration enhance the flexibility of the backing and increase its adhesive characteristics by permitting the backing to conform to small variations in surface levels. The interior surface 14 of the backing 12 has a coating of water activated adhesive

thereon, and legs 20 and 22 are folded upon themselves and held in place by activating the adhesive with water to leave aligned channels 24 and 26 through legs 20 and 22, respectively. Channels 24 and 26 are teardrop shaped in cross section to conform to the cylindrical shape of the arms of a wire hook member 28.

Backing 12 may be made from any type of paper having the requisite strength and flexibility. Examples of such paper are kraft paper in either the bleached or unbleached varieties, paper board, and liner board-type paper having a thickness of approximately 0.006 inch or more. Specifically, 47 pounds per thousand square feet liner board has been tested with the adhesive hangers of the present invention and found to support loads of 50 pounds; and, similarly, 140 pound kraft paper has been tested and found to support 50 pound loads. Extremely flexible paper of less thickness than the paper mentioned above that has the good strength and tear resistance required by backing 12 is presently being developed for use in throw away clothes, and such paper may be used with the present invention since any paper having flexibility, strength and tear resistance may be used and the thinner the paper, the easier it may be removed and the greater its flexibility.

The water-activated adhesive coated on interior surface 14 of backing 12 may be any type of water-soluble adhesive such as animal adhesive, vegetable adhesive or combination animal-vegetable adhesive with the realization that animal adhesive is preferred due to its fast setup time. The adhesive should be water activated to permit easy installation of the adhesive hanger and water soluble to permit removal of the adhesive hanger from a surface after use. With the 47 pound liner board-type paper test discussed above 20 pound 100 percent animal adhesive was used to safely support 50 pound loads.

Exterior surface 16 of backing 12 may be colored for aesthetic purposes with a thin porous film of ink, such as water base flexographic ink, or by adhering a colored tape thereto in removable fashion. The only restriction in providing a colored backing is that a barrier should not be formed on the backing that would prevent removal of the backing from a wall. Thin film inks are removed from the backing by rubbing and colored tapes are peeled from the backing prior to removal of the adhesive hanger from a surface in the manner described hereinafter.

After the folding of legs 20 and 22, backing 12 assumes a bifurcated configuration to permit the use of substantially T-shaped wire hook members and to provide a slot for interlocking cooperation. Wire hook member 28, shown in FIGS. 1-4, is formed by bending a single length of wire to provide a pair of linear support arms 30 and 32, a shank 34 and a hook 36. Arms 30 and 32 are disposed in channels 24 and 26, respectively, and have a length corresponding to the width of legs 20 and 22 such that the arms are supported by the entire folds of the legs to provide maximum support. Shank 34 and hook 36 are formed of double wire, and shank 34 extends perpendicularly from arms 30 and 32 and joins hook 36 which extends from shank 34 at an angle less than 90°. Shank 34 and hook 36 are disposed in and extend from slot 18 in the center of arms 30 and 32 to permit interlocking with a similar adhesive hanger, as shown in FIG. 4.

The length of the double thickness of legs 20 and 22 is greater than the length of slot 18 to minimize any tearing tendency in the slot. Tearing tendency is also minimized by the use of an arcuate upper edge for slot 18 which evenly distributes load forces without any weak spots such as would occur with a squared upper edge. The use of slot 18 facilitates manufacture in that it is a much simpler operation to properly place hook member 28 in slot 18 than it is to place a hook member in a small hole in the backing as is required by conventional adhesive hangers.

Adhesive hanger 10 is illustrated in FIG. 3 secured to a wall 38 to support a picture 40 by a wire 42 attached to the picture. The adhesive on interior surface 14 of backing 12 is moistened, and hanger 10 is secured to wall 38 at a desired lo-

cation. After the adhesive has dried, wire 42 is placed over hook 36 to rest at the bend between shank 34 and hook 36. Normally the bottom edge of the picture rests against the wall, and the picture exerts a force on hanger 10 through wire 42 tending to peel the hanger from the wall. This peeling force is minimized due to the construction of hanger 10 which disposes hook member 28 well below the portion of backing 12 adhesively secured to the wall. Furthermore, hook member 28 is rotatable on an axis coinciding with arms 30 and 32 to permit the hook member to pivot toward the wall and diametrically oppose the forces from the picture. The pivoting of the hook member orients the load forces in a shearing plane parallel with the wall to prevent peeling. Arms 30 and 32 also act as a fulcrum for hook member 28 to prevent any tendency to peel by applying forces of the load against the wall.

In conventional adhesive hangers a bottom flap of the backing is adhesively secured to the wall directly behind and below the hook member to permit the fold to pivot; however, the bottom flap may be peeled from the wall by the peeling force from the picture thereby unduly limiting the weight of objects that can be safely supported. Furthermore, the hook member in conventional adhesive hangers is not pivotable but rather the entire fold pivots to oppose the peeling force and consequently tends to peel the backing from the wall.

If it is desired to take down the picture and remove adhesive hanger 10, a sponge is moistened with water and the backing of the hanger is rubbed with the sponge to dissolve the adhesive and disintegrate paper backing 12. Thus, there is no danger of peeling paint or marring the fragile fabric or material on the wall or other surface to which the hanger is secured.

By using two of the adhesive hangers 10 and object may be supported on a wall or surface without wires or other hanging apparatus attached to the object. A first hanger 10 is secured to the wall, and a second hanger 10' is secured in an inverted manner to the back of the object. The object is then hung by inserting hook 36' of hanger 10' in slot 18 of hanger 10 and hook 36 of hanger 10 in slot 18' of hanger 10', as shown in FIG. 4 such that shanks 34 and 34' are adjacent each other to provide maximum interlocking contact area between hook members 28 and 28'. The complementary interlocking of hangers 10 and 10' is very stable due to the use of the slots in the backing for receiving hooks rather than slots or holes in the hook members themselves; and, accordingly, twisting and turning of the object is prevented. The length of slot 18 in hanger 10 is determined by the length of hook 36 such that just enough space is provided to permit insertion and retraction of a hook member of another hanger 10 when the hangers are interlocked; however, slot 18 is preferably shorter than legs 20 and 22, as mentioned above.

A second embodiment of an adhesive hanger 100 according to the present invention is illustrated in FIG. 5. Identical reference numerals are utilized to indicate parts identical to parts of adhesive hanger 10, and reference numerals with 100 added are utilized to indicate parts similar to parts of adhesive hanger 10.

Paper backing 12 has the same bifurcated construction as described with respect to adhesive hanger 10 and no further explanation is necessary.

A wire hook member 128 has arms 130 and 132 disposed in and supported by channels 24 and 26 of folded legs 20 and 22, respectively. The shank and hook of wire hook member 128 have the same configuration as the hook means of wire hook member 28 of hanger 10 and extend from slot 18; however, arms 130 and 132 are not linear as are arms 30 and 32 but rather are curved, as shown in FIG. 5, such that the knees 131 and 133 where arms 130 and 132 bend to form the shank are raised from the bottom of the folds of legs 20 and 22 and are not in contact therewith. Similarly, the ends 135 and 137 of arms 130 and 132 are bent slightly up so as not to be in contact with the bottom of the folds of legs 20 and 22.

The curvature of arms 130 and 132 provides increased reliability and strength and resists tearing of backing 12. When a load is applied to hook 136 the support for holding the load is

derived from the folded bottom of legs 20 and 22 which engages the arms of the hook member, and the curved arms 130 and 132 of hook member 128 permit the forces holding the load to be located in the center of the folds where the curved bottom portions of the arms are in contact with legs 20 and 22. Hook member 128 serves to diametrically alter its configuration in order to provide more support for larger loads by permitting the load to straighten arms 130 and 132 so that there is more paper in contact with the arms to provide greater support for larger loads.

One advantage of the configuration of wire hook member 128 of FIG. 5 is that forces from the load are prevented from bearing on the edges of folded legs 20 and 22. That is, since the arms of the hook member are in contact only with the center of the folds of legs 20 and 22 there is no tendency to tear either the inner edges adjacent slot 18 or the outer edges of the legs. If a wire hook member could be formed with perfectly linear and aligned lateral arms, the tearing of the edges would not be a great problem; however, any slight variation in the linearity or alignment of the arms will cause either the ends or the knees of the arms to apply undue forces on the edges of the folds to increase the tendency to tear the legs. That is, if either arm is disposed at a slight angle from the folds of legs 20 and 22, the outer edges of the legs have a tendency to tear, and, similarly, if either arm is disposed at a slight angle up from the folds of legs 20 and 22, the inner edges of the legs will have a tendency to tear.

The knees of hook member 128 of FIG. 5 will be formed and pulled down under large loads such that any tearing of the edges is completely avoided for light loads and for heavier loads any tendency to tear at the outer edges of legs 20 and 22 is avoided while the tendency to tear at the inner edges of legs 20 and 22 is reduced due to the even deformation of the wire hook member. Furthermore, the deformation of the arms will provide greater support surface to distribute the load along the fold and prevent any destructive bearing points from being formed.

Adhesive hanger 100 has the same pivoting action as discussed with respect to hanger 16, as shown in FIG. 3, to diametrically oppose load forces, and a pair of hangers 100 may be used in interlocking cooperation in the same manner as discussed with respect to FIG. 4 with the same advantages.

A third embodiment of an adhesive hanger 200 according to the present invention is illustrated in FIG. 6. Identical reference numerals are utilized to identify parts identical to parts of adhesive hanger 10 and reference numerals with 200 added are utilized to indicate parts similar to parts of adhesive hanger 10.

Paper backing 12 of hanger 200 is the same as the bifurcated backing discussed with respect to adhesive hanger 10 and, therefore, will not be further described.

A wire hook member 228 is utilized with hanger 200 and is formed by bending a single length of wire such that the ends of the wire terminate at the upper edge of a hook 236 rather than at the outer edges of folded legs 20 and 22. The support portion of hook member 228 includes a linear member 201 extending across the entire width of backing 12 and through slot 18, and the support portion has looped arms 203 and 205 disposed in channels 24 and 26, respectively. Looped arms 203 and 205 are bent from the outer ends of member 201 into slot 18 behind member 201 to form a shank 234.

The angular relationship of shank 234 and hook 236 is the same as that described with respect to hook member 28. The shape of the support portion of hook member 228 serves to prevent tearing of the edges of legs 20 and 22 by supporting the load forces through the looped arms 203 and 205 such that the force on member 201 is evenly distributed along the folds of the legs. Since member 201 is linear and extends for almost the entire width of backing 12, maximum support is derived therefrom; and, when large loads are applied to hook 236, the support portion of hook member 228 will be slightly deformed under the force of the load and prevent any undue forces on member 201 which could cause an uneven distribution of

bearing forces and tearing. The inner edges of legs 20 and 22 are not subject to tearing because the load forces are applied directly to the looped arms rather than to the portion of member 201 extending through slot 18.

A pair of adhesive hangers 200 may be used in interlocking cooperation in the same manner as discussed with respect to FIG. 4 with the same advantages.

The ability of the adhesive hangers of the present invention to safely support larger loads than prior adhesive hangers is derived from the unique configuration of both the backing and the hook members. The configuration of the backing of the adhesive hangers of the present invention permits the hook members to be disposed well below the adhesively secured portion of the backing to orient support forces in the direction of greatest strength of the adhesive hanger. The pivotal and fulcrum action of the hook members combined with the slotted configuration of the backing permit large loads to be safely supported and obviate the necessity of a bottom flap for the backing, and the configuration of hook members 128 and 228 serve to greatly reduce tearing. All of the embodiments provide complementary hooks and slots to permit interlocking cooperation of the hanger to support an object without twisting or turning. Furthermore, the paper backing of the present invention permits removal of the adhesive hanger after use without fear of injury to the surface to which it was secured.

What is claimed is:

1. An adhesive hanger comprising a bifurcated sheetlike backing folded upon and bonded to itself to form a first leg having a first channel and a second leg having a second channel with said first and second legs separated by a slot; and a hook member formed of a single length of wire bent to form a first arm disposed in said first channel, a second arm disposed in said second channel, a shank connected with said first and second arms and a hook angularly bent from said shank, said shank and said hook being formed of a double thickness of said wire, the width of said shank being not greater than the width of said slot, said slot being of a sufficient size to receive another hook of another adhesive hanger of the type claimed and said arms extending into said slot to provide a support for the said other hook.

2. The adhesive hanger as recited in claim 1 wherein said first arm is linear and disposed in contact with the fold in said first leg, and said second arm is linear and disposed in contact with the fold in said second leg.

3. The adhesive hanger as recited in claim 1 wherein said first arm has a first knee connected with said shank and a first end, and said second arm has a second knee connected with said shank and a second end, said first arm being curved such that the portion between said first knee and said first end is in contact with the fold of said first leg and said first knee and said first end are not in contact with the fold of said first leg, and said second arm being curved such that the portion between said second knee and said second end is in contact with the fold of said second leg and said second knee and said second end are not in contact with the fold of said second leg.

4. The adhesive hanger as recited in claim 1 wherein said wire is bent to form a linear member disposed in said first and second channels in contact with the folds of said first and second legs, said first arm forms a loop with said linear member in said first channel and connects with said shank, and said second arm forms a loop with said linear member in said second channel and connects with said shank.

5. The adhesive hanger as recited in claim 1 wherein a slot having an arcuate upper edge separates said first and second legs, said slot being shorter than said first and second legs.

6. An adhesive hanger comprising a bifurcated sheetlike folded upon and bonded to itself to form first and second legs separated by a slot, said first leg having a first channel therethrough, and said second leg having a second channel therethrough and a hook member having a first arm disposed in said first channel and supported by said first leg, and a second arm disposed in said second channel and supported by said second leg and angular hook means having a shank con-

nected with said arms at said slot, the width of said shank being not greater than the width of said slot, said slot being of a sufficient size to receive another angular hook means of another adhesive hanger of the type claimed and said arms extending into said slot to provide a support for said other angular hook means.

7. The adhesive hanger as recited in claim 6 wherein said slot is shorter than said folded first and second legs and the upper edge of said slot is arcuate.

8. An adhesive hanger as claimed in claim 6 wherein said backing is disintegratable by rubbing it with water to enable it to be removed from a surface to which it has been applied without damage to said surface and has a coating of a water-soluble adhesive thereon.

9. The adhesive hanger as recited in claim 8 wherein said first and second arms are linear.

10. The adhesive hanger as recited in claim 9 wherein said hook member is formed from a single length of wire bent to form said first arm, said second arm and a shank and a hook in said hook means, said shank and said hook being formed of a double thickness of said wire.

11. The adhesive hanger as recited in claim 8 wherein said first arm has a first knee connecting with said hook means and a first end disposed at the outer edge of said first channel, and said second arm has a second knee connecting with said hook means and a second end disposed at the outer edge of said second channel, said first arm being curved such that said first

knee and said first end are not in contact with the fold of said first channel, whereas the portion of said first arm between said first knee and said first end is in contact with the fold of said first channel and said second arm being curved such that said second knee and said second end are not in contact with the fold of said second channel, whereas the portion of said second arm between said second knee and said second end is in contact with the fold of said second channel.

12. The adhesive hanger as recited in claim 11 wherein said hook member is formed from a single length of wire bent to form said curved first arm, said curved second arm and a shank and a hook in said hook means, said shank and said hook being formed of a double thickness of said wire.

13. The adhesive hanger as recited in claim 5 wherein said support means includes a linear member disposed in contact with the folds in said first channel and second channel, said first arm is connected with said hook means and forms a loop with said linear member in said first channel, and said second arm is connected with said hook means and forms a loop with said linear member in said second channel.

14. The adhesive hanger as recited in claim 9 wherein said hook member is formed from a single length of wire bent to form said linear member, said first arm, said second arm and a shank and a hook in said hook means, said shank being connected with said first and second arms and said shank and said hook being formed of a double thickness of said wire.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,633,865 Dated January 11, 1972

Inventor(s) James W. Hogg

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 68, after "sheetlike" insert -- backing -- ;
line 73, delete "and" , second occurrence.

Signed and sealed this 17th day of October 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents