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3,298,651

WALL HANGER

Filed March 7, 1966

FIG. 1

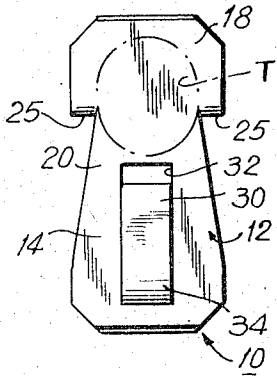


FIG. 2

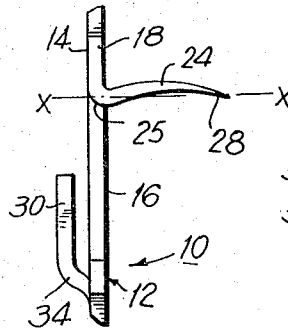


FIG. 6

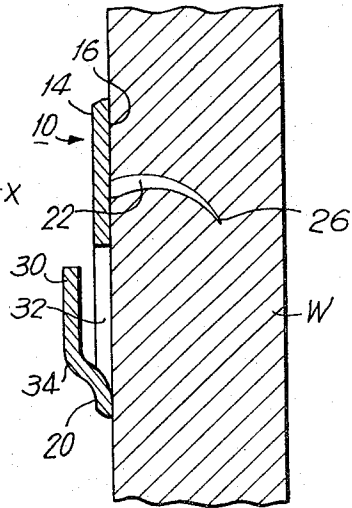


FIG. 4

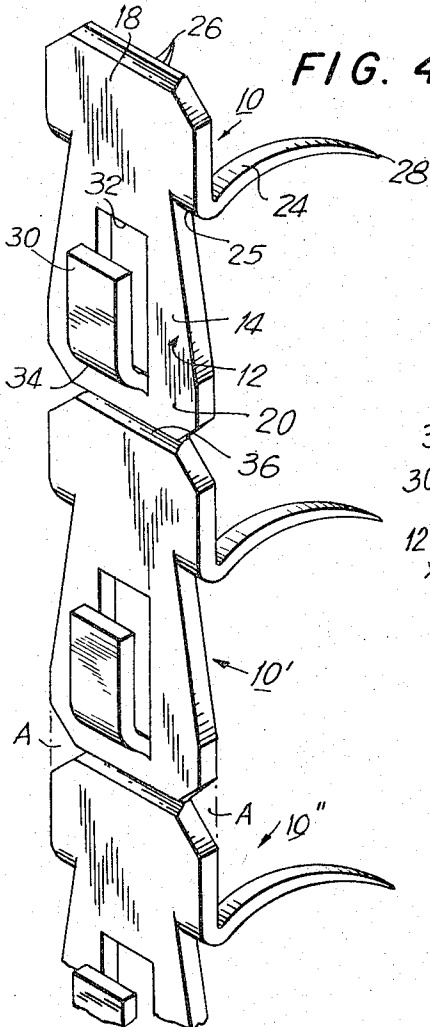


FIG. 3

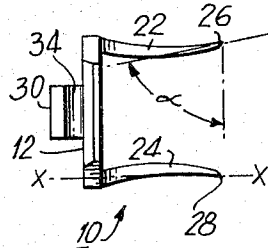
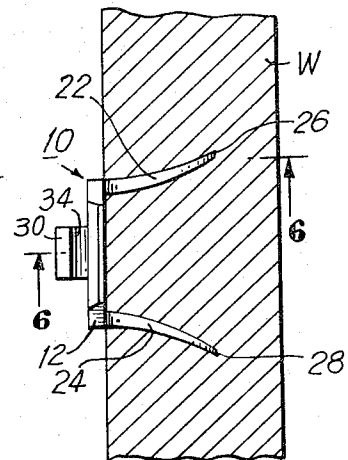


FIG. 5



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WALL HANGER

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The present invention relates to a wall hanger.

It is the primary object of my invention to provide a new and improved wall hanger which can be readily and quickly affixed to a wall surface and which will thereafter remain firmly secured thereto so that pictures and other objects may be suspended from said hanger.

It is yet another object of my invention to provide a wall hanger of the character described which includes a pair of slender pointed tines that are compoundly curved, i.e. curved both downwardly and laterally, the aforesaid curvature enabling the tines to enter a wall surface along a compoundly curved line and to curl within the wall so that although easily emplaced by thumb pressure, the hanger will not readily come loose.

It is another object of my invention to provide a wall hanger of the character described wherein the tines are integral with and sheared from the sides of the hanger and joined thereto at their bases, and the hanger further includes an integral hook, the aforesaid construction permitting manufacture of my wall hanger with an economy of material and by mass production techniques to yield a low-cost but desirable product.

It is still a further object of my invention to provide a wall hanger of the character described which is manufactured in the form of a strip of identical head-to-head interconnected wall hangers and which is sold in this form to the consumer, each hanger being connected to an adjacent hanger on a strip by a weakened zone, such as a score line, at which the user may easily separate the hangers when they are to be used.

Other objects of my invention in part will be obvious and in part will become apparent to the reader in the following description.

My invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the wall hanger hereinafter described and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings in which is shown one possible embodiment of my invention,

FIG. 1 is a front elevational view of a wall hanger constructed in accordance with the present invention;

FIG. 2 is a side elevational view thereof;

FIG. 3 is a top plan view of the wall hanger;

FIG. 4 is a front perspective view of several identical wall hangers joined head-to-foot in a strip;

FIG. 5 is a top plan view of the hanger emplaced into a wall (shown in section) and especially illustrating the added lateral curl the tines take on when inserted in a wall; and

FIG. 6 is a longitudinal central cross-sectional view of a hanger taken substantially along the line 6—6 of FIG. 5 and showing the longitudinal curl of the tines when inserted in a wall.

In general, and in accordance with the teaching of my invention, I provide a wall hanger which is intended to be fixed with unusual firmness to a wall surface merely by thumb pressure. My wall hanger is especially suitable for mounting on walls made of penetrable compositions such as plaster, plasterboard, sheet rocks, strawboard and the soft woods, because the hanger is constructed to have slender tines inserted into and embedded in said walls. The hanger is formed, as by stamping, from a single strip of sheet metal, e.g. soft steel, and constitutes a flat plate

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from which a pair of slender pointed tines protrude rearwardly and horizontally and from which a hook projects forwardly and upwardly. Each tine is free of the plate except at its base where it is integral with the plate.

5 Further, the tines are mirror-images of one another.

My wall hanger features a compound curvature for each of the slender tines which enables them to hold very firmly in any wall into which they are pushed. The compound curvature effects a far greater resistance to withdrawal of the hanger from a wall than do other hangers having nails or having tines which may be either straight or curved in only one plane.

The aforesaid configuration which is an important feature of my invention constitutes a curving of each of the slender tines of my hanger in two planes, to wit, a curvature is achieved both in a vertical plane and in a horizontal plane. In the vertical plane, each of the tines is curved so that its end portion arches downwardly and in the horizontal plane each of the tines is configured so that its end portion arches outwardly, each of the tines curving in said horizontal plane away from the other tine. In other words, each of the tines is outwardly concave as viewed in top plan and downwardly concave as viewed in said elevation.

With this special configuration, when the hanger is pushed into a wall the tines, as they enter the wall, due to their compound curvature, curve additionally outwardly and additionally downwardly. That is, each of the tines "curls" within the interior of the wall, this curling greatly impeding any attempted subsequent removal of the hanger from the wall. The tines are forced to enter the wall until the hanger plate abuts the wall. Then, articles such as pictures and the like may be hung from the hook which is integrally formed from the hanger.

Referring now in detail to the drawings, the reference numeral 10 denotes a wall hanger construction in accordance with the teaching of my invention. It will be seen that the entire hanger is integral (formed from one piece of material) and is eminently suitable for formation from a single piece of rigid narrow strip sheet metal stock, e.g., soft (low carbon) steel or soft brass. In a suitable embodiment of my invention, the metal stock is about 0.04 inch thick.

The hanger includes a plate 12 which is generally vertically elongated (see FIGS. 1 and 2) and which has a flat broad front face 14 and a flat broad rear face 16. As best seen in front elevation (FIG. 1), the plate includes an upper mushroom-shaped head 18 and a pendant long stem 20. The remaining components of the hanger, other than said plate 12, are in one piece with and protrude forwardly and rearwardly from said plate.

The hanger further includes a pair of transversely opposed like (mirror-image) slender tines 22, 24. The tines are formed by shearing the same from the side portions of the original blank for the hanger and are joined to the plate at their respective bases at the under sides of the outer ends of the head 18, the same being located at the sides and intermediate the ends of the plate. It will be appreciated that the shearing off of the length of the tines and the rearward orientation of the tines gives the plate the aforementioned mushroom-head configuration, as seen in FIG. 1. Moreover, the joint of the base of each tine and the plate constitutes a shoulder 25 which has a large interior area integral with the plate to assure that the base will not break from the plate.

The tines, when the plate 12 is vertical, extend in a generally horizontal and rearward direction from the plate approximately perpendicularly thereto, but have a special compoundly curved configuration soon to be described. Each of the tines tapers from a base of narrow transverse (side-to-side) width (see FIG. 3) to a thinner end portion

which terminates in a sharp tip, respectively, 26, 28 so that the tines may be pushed by thumb pressure into a wall W. For the same reason the thickness of each tine is tapered adjacent its pointed tip (see FIG. 2). It will be apparent that the material of each tine before being sheared from the blank strip was disposed within the width of this strip so that a strip of minimum width could be employed.

The plate 12 further includes a forwardly and upwardly projecting hook 30, the same being struck from a central portion of the plate 12 and leaving an elongated slot 32 in the plate intermediate the top end of the head 18 and the lower end of the stem 20. The lower portion of the hook 30 joins a lower portion of the stem 20 at a bend 34. The hook with its bend has a configuration appropriate to receive and hang a wire spanning the rear of a frame of a picture or to protrude through an aperture in an object to be suspended from the wall. The bend 34 is located between the ends of the head and stem on a line running between the bases of the tines. Quite apparently this construction for the hook requires neither additional length nor width for the plate, thus again minimizing the amount of material required.

The top end of the slot 32 and thus the tip of the hook is spaced from the top of the plate 12 a distance such as to present an upper flat large area of the plate which may be conveniently contacted by the ball of the thumb of the user's hand, when pushing my hanger into a wall, much as is presented by the head of a thumbtack. Said slot end and hook tip terminate below the shoulders to make said pressure area as large as conveniently possible. In FIG. 1 the pressure areas is designated by dot-and-dash lines and reference letter T.

Each tine, as best seen in FIG. 3, bends outwardly in a horizontal plane and, as seen in FIG. 2, rearwardly and downwardly in a vertical plane. In the horizontal plane, the tines curve away from one another. The curves have an arcuate configuration which can be described as outwardly concave or outwardly bowed. The curvatures of the tines in two planes is most aptly denominated as a compound curve. It should be noted that the tip of each tine lies along a chord which runs from the tip of the tine to the base of the tine, perpendicularly to the plate 12. The said chord is represented by the line X—X in FIGS. 2 and 3. Further, the base of each tine projects rearwardly from the plate in a direction substantially perpendicular to the plate and the length of the tine (except its base) follows a sweeping uninterrupted curve of large radius. Said radius is in the order of $\frac{1}{2}$ inch. The tip of the tine forms an angle with the wall W which is only slightly less than a right angle so that the tip will penetrate and not skip outwardly on the wall surface. The angle is less than 90° (measured on the inside of the tine) so that said tip enters with a sloping orientation to start it on its curl. Said angle (α in FIG. 3), is preferably 80° . In a suitable commercial embodiment of my invention, each tine is about 0.04 inch square in its base transverse dimension.

I have found that the compound lateral and vertical curvatures which have been given to each of the tines causes them to tend to be fixed firmly in a wall despite the moderate degree of force, i.e., thumb pressure, that suffices to implant the tines. FIG. 5 illustrates the additionally curved spread out paths (in a horizontal plane) which the tines have followed during their insertion. The tines are inserted to a point at which the back face 16 of the plate abuts and is flat against the surface of the wall. A comparison of the tines' curvature as shown in FIG. 3 wherein the hanger is illustrated prior to insertion into a wall, and said curvature as shown in FIG. 5 wherein the hanger is illustrated fully inserted into a wall, demonstrates that the tines during the course of their entry into the wall have "curled." That is, the tines have assumed a curvature greater than their initial "as manufactured" curvature; the tines have been brought to an

arcuate configuration of smaller radius than the radius of their original curvature.

The "curl" of the tines is also seen by a comparison of FIGS. 2 and 6, the former illustrating my wall hanger prior to being fixed to a wall and the latter illustrating the downwardly bowed greater curvature which the tines have assumed when they are fully inserted into a wall. I have found that the compound curvature just described causes a firm connection between my wall hanger and a wall, a connection that is essentially permanent and can withstand the application of substantial weight, for example, fifty pounds.

The connection of my wall hanger to a wall is enhanced by the utilization of two oppositely compoundly curved tines. It will be appreciated that when a pair of tines of said hanger is inserted into a wall, each of which bows initially in a different direction, the tines will curl further away from one another as they enter a wall surface. To displace the hanger it is necessary to force the tines to straighten, i.e. to rebend the tines, as they are withdrawn; or it is necessary to rupture the portion of the body of the wall that lies in the withdrawal path of the tines. Thus, I utilize sliding friction to retain the tines of my hanger in place in a wall (as do conventional hangers having straight tines) and in addition I utilize the resistance of the tines to bending and resistance of the wall to rupture as further deterrents to the accidental removal.

To enable the wall hanger of my invention to be mass produced with the greatest economy so that it may be marketed at a popular per unit price, it is desirable to fashion the hangers from an elongated strip of metal and to form the tines and hook of each hanger in such a manner as to leave adjacent hangers connected to one another in head-to-foot orientation. This permits several hangers to be marketed in strip form as a single unit. The user will, prior to use, break or fracture one hanger from another and to aid in this separation and further to define the boundaries of each hanger, a break or rupturable line 36 is impressed at the juncture of the stem of one hanger and the adjacent edge of the head 18 of the next hanger. Said break line (weakened transverse zone) is formed by scoring (indenting) the sheet metal strip transversely thereof at appropriate locations therealong so as to provide grooves at which points the material of the strip is of relatively thin front-to-back cross section. A user, by simply bending one hanger 10 back relative to another hanger 10' about the break line 36, will easily rupture the strip at its area of smaller cross-section where, in addition to the weakness developed by thinning the metal, the strip has been weakened by cold working, and thus separate one hanger from another. In a like manner, the hanger 10' can be, when so desired, separated from the next successive hanger 10''. The head-to-foot connection of the hangers in a strip, in conjunction with the formation of the tines from the sides of the strip and the formation of the hooks from the central part of the body of the plates, results in a substantial economy in use of metal and adds to the reduction in cost which I have achieved by the described structure.

In the stamping of a strip of hangers, only the notches A (see FIG. 4), centered on opposite ends of the break line, between each adjacent pair of hangers are removed as scrap for formation of the hangers. The respective outward edges of the tines 22, 24 of the hangers constitute the major portions of the former edge boundaries of the strip from which the hangers were fabricated.

It thus will be seen that I have provided a wall hanger which achieves the several objects of my invention and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein described or shown in the accompanying

drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and useful, and desire to secure by Letters Patent:

1. A wall hanger for suspending an article from a wall said hanger being formed from a single piece of sheet metal and including a flat plate, a pair of pointed slender tines integral with the plate, each tine having a base joined to the plate, the bases of the tines being laterally spaced apart on the plate and located intermediate the ends of the plate, each tine projecting rearwardly from the plate with its base generally perpendicular to the plate and the tine having an uninterrupted sweeping arc of large radius, and the tip of each tine lying along a chord running from the tip to the base perpendicular to the plate, the tip of each tine forming an interior angle of slightly less than 90° to a plane perpendicular to the chord, the tines being laterally outwardly concave and downwardly concave whereby the tines are compoundly curved, and an upwardly facing hook integral with the plate and projecting forwardly therefrom, whereby when the hanger is fixed to a wall by the insertion of the tines into the interior of a wall as by thumb pressure the tines follow a curved path and assume a more arcuate curled configuration thereby resisting removal from the wall.

2. A wall hanger as set forth in claim 1 wherein each tine is located at a different side of the plate.

3. A wall hanger as set forth in claim 2 wherein the base of each tine forms a laterally jutting shoulder with said plate.

4. A wall hanger as set forth in claim 1 wherein each tine tapers from its base to its tip.

5. A wall hanger as set forth in claim 3 wherein the hook has an upper end which is spaced downwardly from the shoulders thereby to present a flat long broad area which may be contacted by the thumb of the hand of a user to push the hanger into the wall.

6. A wall hanger as set forth in claim 1 wherein the hook is formed from the center of the plate and has a bend joined to the plate intermediate the sides and ends of the plate and centered laterally between the bases of the tines.

7. A chain of wall hangers unitarily connected in head-to-foot orientation and formed from a single strip of sheet metal, each hanger including a flat plate, a pair of pointed slender tines integral with the plate, each tine having a base joined to the plate, the bases of the tines being laterally spaced apart on the plate and located intermediate the ends of the plate and at the sides of the plate, each tine projecting rearwardly from the plate with its base generally perpendicular to the plate and the tine having an uninterrupted sweeping curve of large radius, and the tip of each tine lying along a chord running from the tip to the base perpendicular to the plate, the tip of each tine forming an interior angle of slightly less than 90° to a plane perpendicular to the chord, the tines being laterally outwardly concave and downwardly concave whereby the tines are compoundly curved, an upwardly facing hook integral with the plate and projecting forwardly therefrom, said hook having a bend joined to the plate intermediate the sides and ends of the plate and centered laterally between the bases of the tines, and a transverse linear groove at the boundary between the foot of each hanger and the head of an adjacent hanger constituting a weakened zone, the grooves having front-to-back cross-sections less than the cross-section of the strip, the trip being readily fracturable along the grooves whereby a user can separate one hanger from another prior to use.

8. A chain of wall hangers as set forth in claim 7 wherein the outward edges of the tines of the hangers constitute the major portions of the previous edge boundaries of the strip of sheet metal and the foot of one hanger and the head of an adjacent hanger have facing edges which define two sides of a notch.

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