

[72] Inventor **Lucille Mitchell**  
 4325 Hampton Blvd., Royal Oak, Mich.  
 48073

[21] Appl. No. **737,182**  
 [22] Filed **June 14, 1968**  
 [45] Patented **Dec. 15, 1970**

2,919,089 12/1959 Durham ..... 248/216  
 3,108,404 10/1963 Lamb ..... 85/65

**FOREIGN PATENTS**

146,232 11/1902 Germany..... 248/496

*Primary Examiner*—Roy D. Frazier  
*Assistant Examiner*—J. Franklin Foss  
*Attorney*—J. Harold Byers

[54] **WALL HANGERS**  
 5 Claims, 2 Drawing Figs.

[52] U.S. Cl..... 248/220.5,  
 85/3, 248/497

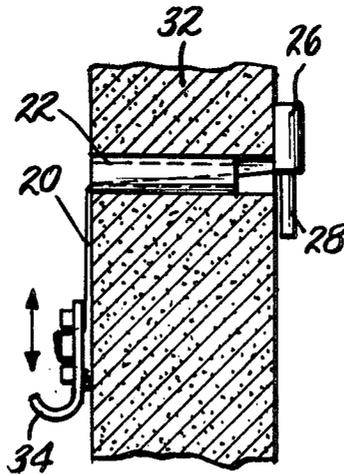
[51] Int. Cl..... E04g 3/00

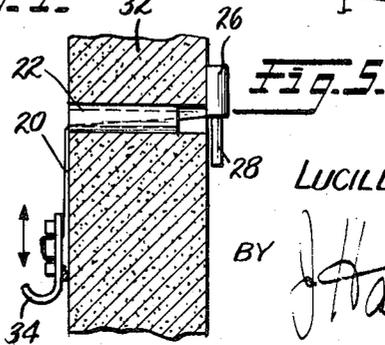
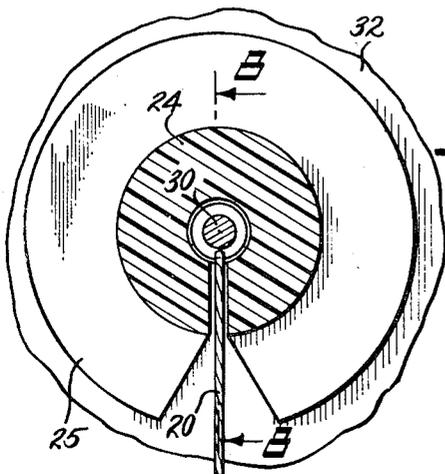
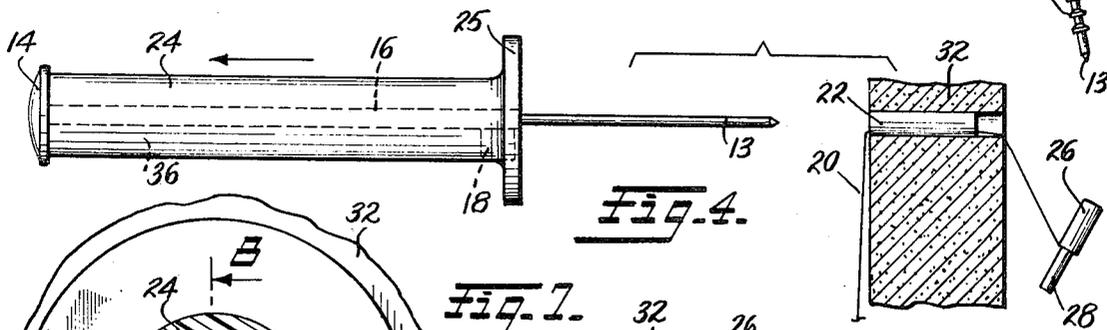
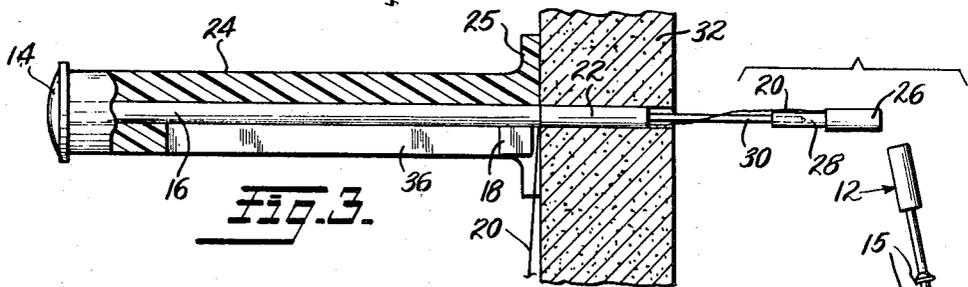
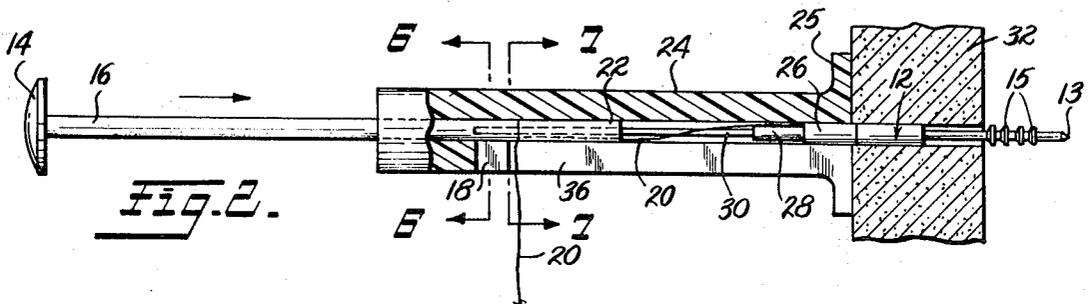
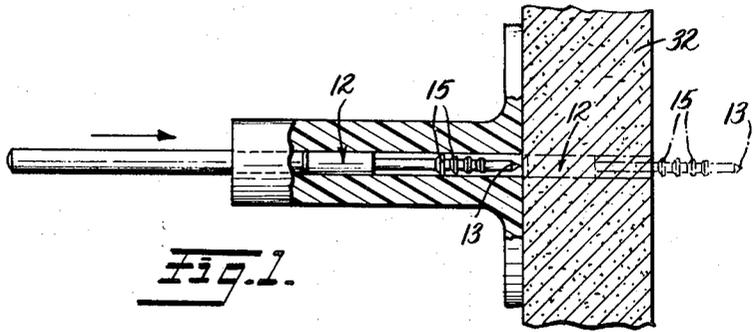
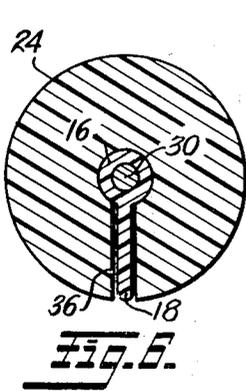
[50] Field of Search..... 248/216,  
 217, 220.5, 301, 496, 497, 498, 304; 85/3, 3S, 3K,  
 65

[56] **References Cited**  
**UNITED STATES PATENTS**

1,493,197	5/1924	Hall.....	85/3
2,203,146	6/1940	Hexdall.....	85/3
2,301,135	11/1942	Molat.....	85/3
2,610,013	9/1952	Gibson.....	248/310X

**ABSTRACT:** A wall hanger useful for hanging framed pictures, mirrors and like objects from walls or ceilings, the visible portion of the hanger consisting merely of a thin, flexible cord of nylon, or metal wire which protrudes from the facing surface of the wall or ceiling, the holding portion of the flexible member extending back into and being anchored within the wall. When it is desired to relocate the picture or like object, removal of the protruding cord or wire can be effected merely by clipping same close to the facing surface of the wall, the interior portion of the hanger remaining undisturbed. The anchoring means may be formed by injection of a hardenable plastic bonding material into the wall opening, so as to seal the anchor means inside the opening along its length and to form an expanded body of material at the inner end of the opening.





INVENTOR  
LUCILLE MITCHELL

BY *J. Harold Myers*

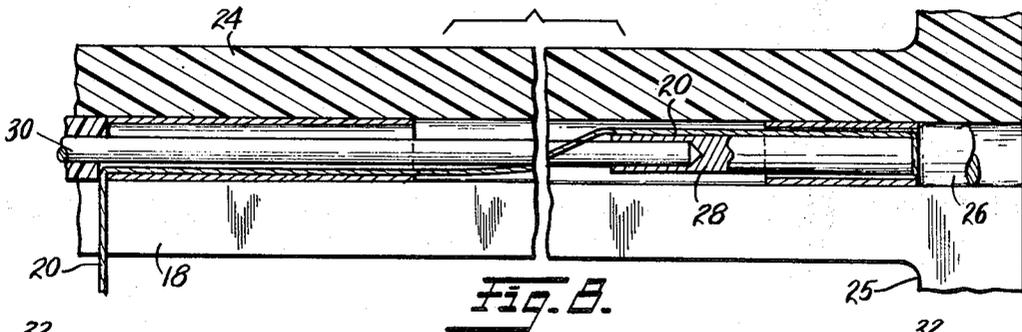


Fig. 8.

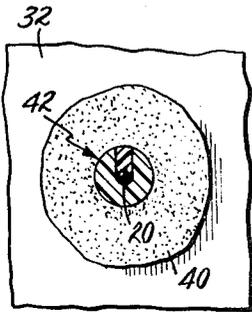


Fig. 10.

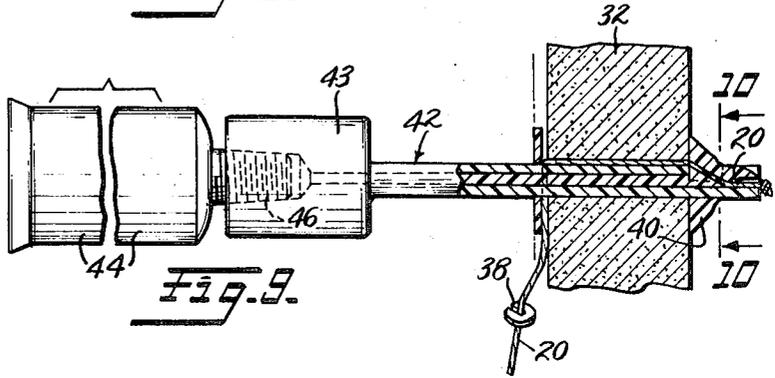


Fig. 9.

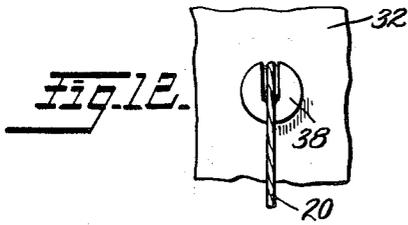


Fig. 12.

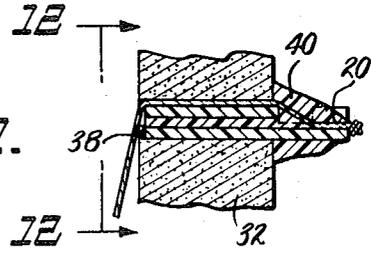


Fig. 11.

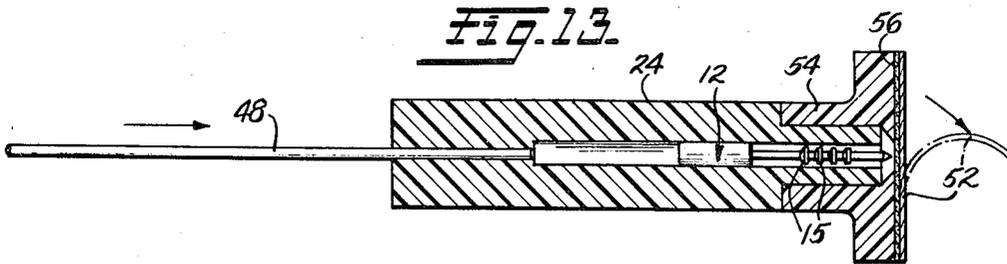


Fig. 13.

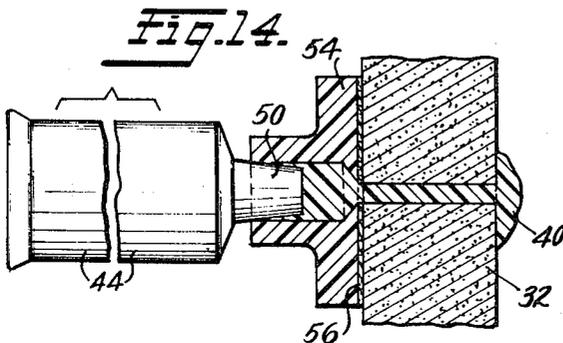


Fig. 14.

INVENTOR

LUCILLE MITCHELL

BY

*Harold Olsen*

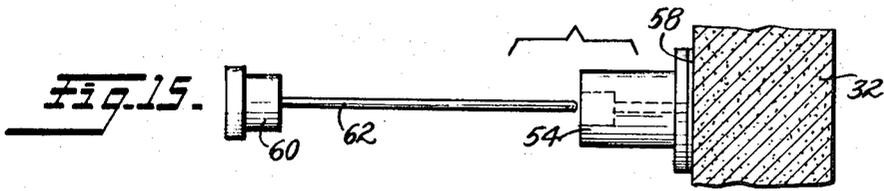


Fig. 16.

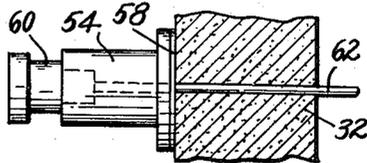


Fig. 17.

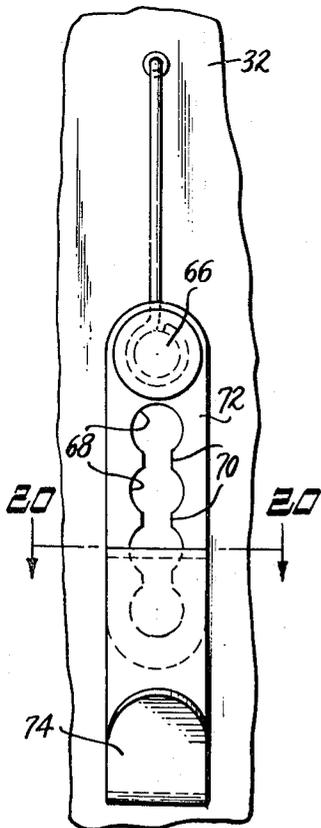
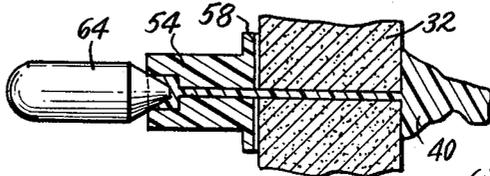


Fig. 19.

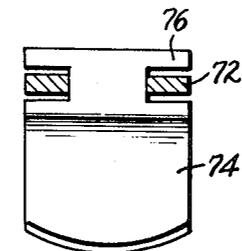


Fig. 20.

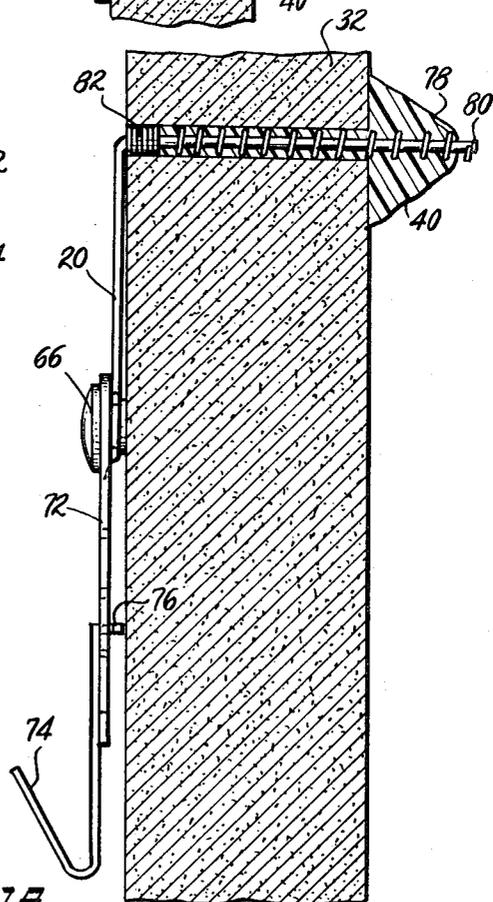


Fig. 18.

INVENTOR  
LUCILLE MITCHELL

BY *Harold Byers*

## WALL HANGERS

## SPECIFICATION

The present invention relates to means for fastening pictures and like objects to interior walls and ceilings.

Devices of similar purpose are known to the art under the titles picture nails, or wall hangers, and these in construction generally consist of an anchor part and a hanger part. Lag screws and expandible bolts are sometimes used. One popular device consists of a flat metal ribbon having a hook at one end and a means for receiving a nail to be driven into the plaster at the other. Another device employs an adhesive strip which is supposed to provide sufficient load-carrying ability to facilitate the hanging of pictures and the like. All of these prior devices have drawbacks. They usually damage or mar the wall surface, frequently damage the plaster in the course of being driven into the wall or especially when being drawn out, when a picture or like object is moved. The adhesive strip-type frequently fails over a period of time. Other drawbacks are known to persons who have tried available hangers.

It is an object of the present invention to provide a wall fastener that avoids objectionable features hitherto associated with such fasteners. It is an object to provide a wall fastener that is convenient and relatively easy to quickly install. It is a further object to provide a fastener which when installed will have no unsightly damaging or marring effect on the wall. It is a further object to make available a device which will hold fast and which will sustain considerable weight objects. A further object is the design of a fastener which can be discarded inoperative without leaving any unsightly mark in the wall. And finally one which will combine these with other desirable features.

The wall fastener of the present invention does not create an unsightly appearance. First, it is of small diameter and its installation involves the formation of an opening in the wall or wall plaster which may be as small or smaller than 0.040 inch diameter (i.e. slightly larger than that of a pin). This is barely visible or at least unnoticeable. In furtherance of this object a small washer may be provided so located as to cover the hole, a nylon cord, thread or wire of small diameter being threaded through the washer and constituting the sole visible portion. A suitable paint may be used to cover same and blend with the surrounding wall surface. As is well known with conventional hangers, when it is desired to relocate the supported picture or other object it is also desirable to eliminate the unsightly wall hanger, and this normally involves withdrawal of the nail or anchoring device that has been driven into the wall. It is almost impossible to avoid damage to the wall by withdrawal of the holding nail, screw or bolt. In fact it is in the effort to extract the nail, screw or bolt that the most damage to the wall usually will result. With the device in accordance with the present invention, all that is normally visible is a thin cord projecting from the wall, and if relocation is desired, all that is necessary is to cut the cord close to the wall leaving practically no visible evidence of installation. The interior anchoring means need not be removed or in any way disturbed. A new one is easily installed at a new desired location.

The device made according to the present invention comprises a small diameter shank made preferably of metal and adapted to be driven entirely through the plaster layer of the wall and extend at least to the inner surface of said plaster layer of the wall; a cord of small diameter extending through the wall substantially parallel with the shank, the cord made preferably of nylon or of steel wire which may be covered with nylon and extending forward so as to project from the facing surface of the wall.

Anchoring means are provided to fix the device and hold the shank and the cord securely in the opening. This anchoring means may be an extension into the inner space of the wall, and may consist of a mechanical anchor or an anchor of plastic material formed by a novel method of application within the wall.

Installation is effected by the nature of the shank which may be a hollow tube through which is inserted either: (A) a plastic anchor in the form of an enlarged blob of said plastic, or (B) a mechanical anchor pin inserted through the bore of hollow tubular shank means, which is permitted to drop within the hollow space of the wall and swing into position at an angle to the axis of the shank so as to lie athwart the bore of the shank while being retained by the inner end of the flexible tie means. In the modification utilizing a plastic material the latter is injected while in a liquid or viscous state through the bore of the shank and permitted to harden after issuing from the inner end of the shank. The plastic material which may be selected from a large number of plastic materials currently on the market will preferably have certain adhesive properties as exemplified by many adhesives of the quick drying variety. This substance which may be purchased, packaged in collapsible tubes or capsules, is injected by pressure exerted upon the walls of the collapsible container through coupling means which are provided as hereinafter described.

The wall hanger may be packaged as a kit comprising a broach adapted to initially penetrate the wall. Also a driving pin and a guide member adapted for placement against the surface of the wall to act as a guide for the shank and appurtenant parts.

Whereas the invention is pointed out with particularity in the subjoined claims, for purposes of full illustration and to enable direct practice thereof, the following description is submitted.

Having reference to the drawings:

FIG. 1 is an elevation partly in section of a species according to the present invention;

FIG. 2 is a like view in elevation showing a push button type assembly in process of being mounted in the wall;

FIG. 3 is a like view showing a stage in the progress of the installing operation;

FIG. 4 shows a stage in which the anchor and wall bushing have been pushed into full extent;

FIG. 5 shows the hanger in place with the anchor pin athwart the wall opening and hook means attached to the flexible member;

FIG. 6 is a sectional view taken from line 6-6 of FIG. 2;

FIG. 7 is a sectional view taken from line 7-7 of FIG. 2;

FIG. 8 is an elevation, partly in section, through the guide bushing showing parts inserted;

FIG. 9 is a vertical section in part of a modification adapted to being fixed in place by a hardenable plastic material;

FIG. 10 is a view from the line 10-10 of FIG. 9;

FIG. 11 is a sectional view showing a stage in the process of fixing the modification shown in FIGS. 9 and 10;

FIG. 12 is a view taken from line 12-12 of FIG. 11;

FIG. 13 is a view of a stage in the process of mounting the assembly according to the invention;

FIG. 14 is a vertical view of the final stages of mounting the type of fastener using adhesive plastic material;

FIGS. 15 to 20 show a modified form of the invention which has proved highly satisfactory;

FIG. 15 is a vertical view partly in section showing a wall hanger according to said modified form;

FIG. 16 is a similar view of the wall hanger of FIG. 15 at a further stage of entry into the wall;

FIG. 17 shows a further stage in the process of installation wherein bonding agent is being injected into the prepared opening;

FIG. 18 shows the flexible member inserted in final position with appendant hook plate attached thereto;

FIG. 19 is a front elevation of the wall hanger installed as in FIG. 18;

FIG. 20 is a view taken on line 20-20 of FIG. 19;

Having reference now to details of construction, an assembly may be provided including a broach 12 having an entering point 13 and a series of cutting flanges 15. As shown in FIGS. 1 to 7 a driving rod or shaft forces broach progressively through the plaster of the wall 32, this being accomplished by

pushing or tapping. The broach, being entirely forced through the wall falls as shown in FIG. 3, being followed by anchor member 26, to which is attached the end of cord 20 which extends therefrom forwardly and depends from the inner surface of the wall for any length desired, and terminating in a hook 34 adjustable as to height (FIG. 5). The anchor member 26, 28 is held captive by the cord 20 (FIG. 4) and thereby is drawn back until it rests against the inner surface of the wall athwart the opening therein as shown in FIG. 5. Inside the opening that has been made in the wall the cord passes through the bore of sleeve 22 which meantime has been forced inwardly to an extent predetermined by the location of the lug 18 on the driving rod 16 as latter comes to rest against the surface of the wall 32. A suitable distance of countersink of the sleeve would be one-sixteenth of an inch assuming that a washer one-sixteenth inch were to be placed as a cover for the opening in the wall. The material of the bushing 22 and the washer suitably would be nylon.

The entire assembly is initially aligned by means of a guide member 24. This is pressed against the wall whereby means of flange 25 it is held in a position with its axis perpendicular to the surface of wall 32. Anchor pusher rod 30 aligns with driving shaft and with anchor pin 28 so that anchor member 26 is carried forward through the opening until the anchor is entirely beyond the wall 32 as in FIG. 3 and on withdrawal of the rod drops into position as shown in FIG. 4 to be thereafter drawn back by means of the cord into position shown in FIG. 5. It will be clearly understood that weight placed on hook 34 will be held by anchor 26 to the extent of strength of cord 20. Suitable material for the cord is nylon or a nylon-covered steel wire and this is more than adequate for ordinary hangings such as pictures, etc.

The device according to my invention is suitable of course for hanging lamps and like objects from the ceiling, the process of installation being substantially the same as above described.

From the foregoing description it will be gathered that the anchoring means according to this embodiment will be wholly mechanical in nature. Alternatively a bonding agent 40 may be employed in the following novel manner.

Having driven a hole through the plaster, a tubular member 42 is introduced therein together with a cord, wire or other thin flexible interconnecting part, these extending through the plaster and out into the space beyond the partition. In the form illustrated in FIG. 9, the near end of the tube member is enlarged to form a nipple member 43 which serves as a means of coupling a collapsible container 44 containing a supply of bonding agent. The means of coupling may comprise a screw thread 46 or a friction coupling 50 as in FIG. 14. Plastic bonding material 40 is forced into the tube 42 or directly into the driven hole. The plastic bonding material is introduced until it emerges from the opposite opening of the hole where it expands to form a blob on the inside surface of plaster partition as illustrated in FIGS. 9, 10, 11 and 14. Also the plastic bonding material will penetrate into the space surrounding the tube (FIGS. 9 and 11) thereby sealing the flexible member in the hole as well as washer 38 in fixed position as the bonding agent hardens. FIG. 14 illustrates a process whereby bonding agent 40 is injected directly into the driven hole in the wall partition 32 after which step bushing 22, flexible element 78 or anchor member 26 may be introduced.

Various ways of accomplishing a leading concept in the present case will be evident from the foregoing description. This concept is concerned with the provision of a wall hanger comprising a flexible member adapted for suspending objects such as framed pictures or the like from wall or ceiling and interconnecting the suspended object with an internal wall anchoring means. The flexible member in accordance with the present invention, in contrast with known hangers having similar purpose, is not a rigid or inflexible element, does not exert an undue twist and strain on the wall partition, but is in essence a thin cord, wire or cable, with or without reinforcement, and exerts a distributed tension on and within the wall.

Unightly protrusions are avoided. Elimination is merely a matter of cutting the cord close to the wall, followed if desired by application of a dye, color or pigment to practically eliminate contrasting markings.

It will be clear that the hanger according to the concept of the present invention may be installed in several ways. A preferred method is illustrated in FIGS. 14 to 20. In this method after the hole is drilled the bonding agent, a self-hardenable composition, is introduced into the hole after which a flexible element consisting of flexible wire core 80 bearing a helical wire winding 78 is introduced. Extension of wire core 80 supports a small metal plate 76, having a vertical row of round openings 68 joined by slot openings 70. A hook plate 76 bent to hook form at one end and cut to a T-shape at the other is provided. FIGS. 18, 19 and 20 illustrate how the metal plates can be rotated to engage selectively at one of the openings to correspond to desired height. Hook plate 72 thus is brought to bear flat against wall 32 thereby lying in an advantageous position to secure pictures and like flat objects against the wall.

It will be found desirable, especially in plaster walls, to utilize a driving rod 62 to form the hole. The rod 62 is adapted to form a hole of small diameter, e.g. 0.040 to 0.018 inch, 0.031 inch being a preferred size, can be driven through the plaster partition by tapping with a comparatively light instrument. The driving of the rod is facilitated if the end of the rod is covered by a protective device such as plastic button 60.

The drilling of the hole in the plaster, which may be aided by use of a broach 12, (which may be discarded as in FIG. 3) is aided by use of a guide member 54 or 24 as shown in FIGS. 3 and 16.

After the hole is drilled, the guide member 54 is left in place. Being held in position by a wax compound adhesive 58, the second step in the operation, i.e., the introduction of the plastic bonding agent, can then be carried out as shown in FIG. 17, while insuring continued alignment of the guide 58 with the hole in the plaster. The wax compound adhesive has the characteristic of temporary adherence, but also is removable without damage to the wall paper or plaster.

Those skilled in the art will understand how certain adaptations can be made in the practice of the invention. Thus in installing the hanger the use of a pushbutton (14,60) is optional. The button element can be omitted if desired as shown in FIG. 1. The provision of a slot 36 to limit the extent of progress of element 18 and rod 48 is optional. Protective strip 52 is preferably provided to keep adhesive tacky (FIG. 13) but will generally be found unnecessary with use of wax compound adhesive 56.

Containers 44 or 64 for the bonding agent are of course not to be construed as limiting, a wide variety of suitable such tubes or capsules being available on the market.

A preferred embodiment is illustrated in FIG. 18. It is important to note that the helical winding in this embodiment is tight-wound at the forward end 86 and that inwardly therefrom turns are spaced.

Various types of terminal hanger means may be used. The plate and hook type illustrated in FIGS. 18 and 19 have been found particularly well adapted to purposes of the present invention. The number of circular holes or openings 66 can be selected as preferred. The arrangement illustrated is particularly useful in view of the fact that it assures that the hook plate lies flat against the wall.

In the claims and in the herein description it will be understood that the article and method of application are adapted to installation similarly either in walls or ceilings and the term "wall hanger" is not exclusive of such use. The terms "wall," "partition," and "wall partition" are used interchangeably. The "facing surface of the wall" refers to the surface visible to occupants of the room and which is customarily covered with paint or wall paper.

I claim:

1. A wall hanger for hanging objects such as pictures and picture frames from interior walls or ceilings comprising in-

5

combination a length of flexible anchor cord, a freely hanging elongated anchor means attached to one terminal end of said anchor cord, an article attaching means attached to the other terminal end of said anchor cord and a sleeve member of substantial length surrounding said anchor cord between the article attaching means and the anchor means, the sleeve being of a diameter as to be snugly received within an opening which is of sufficient diameter to permit the free passage therethrough of said anchor means.

2. A wall hanger according to claim 1 wherein said flexible

6

member comprises a nylon cord.

3. A wall hanger according to claim 1 wherein said flexible member comprises a nylon covered metal wire.

4. A wall hanger according to claim 1 wherein said flexible member comprises metal wire.

5. A wall hanger according to claim 1 wherein said object attaching means comprises a perforated plate and a hook member having at one end thereof a T-shaped lock element engageable in any one of said perforations.

10

15

20

25

30

35

40

45

50

55

60

65

70

75