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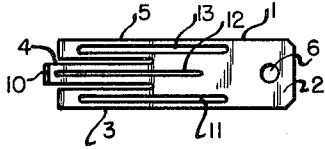
L. N. HAVENER

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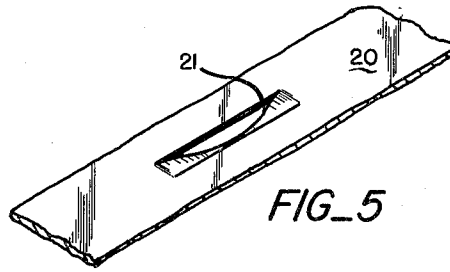
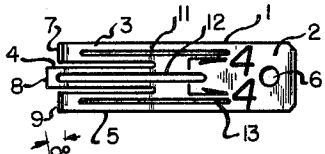
HANGER CLIP

Filed Feb. 6, 1964

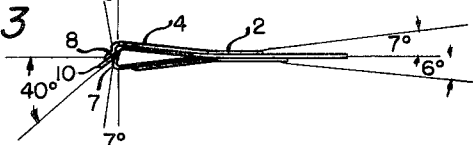
FIG_1



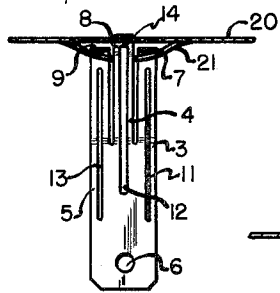
FIG_2



FIG_3



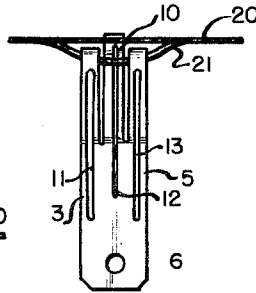
FIG_4



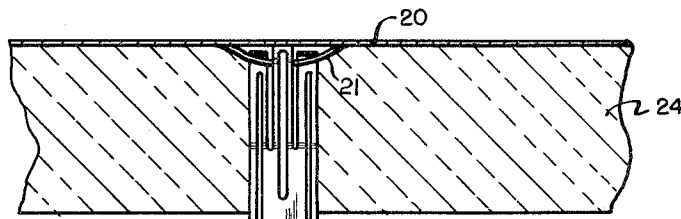
FIG_7



FIG_6

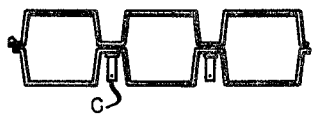


FIG_8



FIG_9

FIG_10



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HANGER CLIP

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 13 Claims. (Cl. 248-62)

This invention relates generally, as indicated, to a hanger clip adapted for use in the construction industry and more particularly to such a clip for suspending false ceilings, light fixtures, heating and piping, conduits, sheet metal ducts, and the like.

There has long been a need in the construction industry for a convenient and inexpensive suspension means for hanging equipment from the underside of a steel floor. Prior to this invention, such items as those listed above were supported by hangers which were inserted through openings in a floor by skilled workmen working on the floor above. This process was extremely costly and time-consuming since the pouring of concrete or other construction had to be held up until the insertion was completed. In addition, the work was useless if the measurements were not exact or if revisions were needed at a future time.

Another method previously used to suspend such articles was that of inserting a wire end into an opening in a suspension device and doubling and twisting the wire around itself. This process is also extremely time-consuming and difficult to accomplish in many cases due to the lack of adequate room in which to maneuver properly. This method also possesses a considerable disadvantage from a safety standpoint in that such a suspension system is not completely dependable.

It is an object of this invention therefore to provide hanger clips which are of simplified construction and which can be installed without extra labor or materials.

Another object of this invention is the provision of hanger clips for supporting articles of the type described which are extremely versatile in their use and capable of placement in various locations to compensate for future revisions.

Yet another object is the provision of hanger clips which can be simply installed in a minimum amount of time and a minimum amount of space and which do not obstruct or hinder work on the floor above during installation.

Other objects, features and advantages of this invention will be apparent to those skilled in the art after a reading of the following more detailed description of the invention.

These and other objects are achieved by means of this invention in which a hanger clip is provided comprising a strip of resilient sheet material with a plurality of prongs angularly extending from the one end and an opening extending therethrough adjacent the opposite end to receive a hanger or the like therein. The prongs have bent end portions which are adapted to engage and grip securely a tab member of a support plate and to suspend the clip therefrom. At least one of the prongs and its bent end portion are oppositely inclined from the other prongs and bent end portions with the bent end portion of this prong being rebent at the tip to facilitate engagement of the clip with a tab member.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:
 FIGS. 1 and 2 of the drawings are plan views illustrating the two sides of the hanger clip;

FIG. 3 is a side view of the clip;
 FIG. 4 is a section view taken along line 4-4 of FIG. 2;

FIG. 5 is an isometric view of a support plate for the clip of this invention;

FIG. 6 is a view illustrating the deformation which occurs in the tab member of a support plate after use;

FIGS. 7 and 8 are plan views illustrating the two sides of the clip when attached to a support plate;

FIG. 9 is a view partly in transverse section illustrating the clip and support plate in a typical installation; and

FIG. 10 is a sectional view illustrating the placement of hanger clips C in relation to the underside of a steel floor.

Referring now more particularly to FIGS. 1-4 of the drawings, a hanger clip is designated generally at 1 and comprises a strip of resilient sheet material 2 having a plurality of prongs 3, 4 and 5 which extend angularly from the horizontal axis, as best illustrated in FIG. 3. An opening 6 extends through the strip 2 at the opposite end to receive a hook or the like therein for suspending the desired article.

Each of the prongs has slightly negatively angled bent end portions 7, 8, and 9 which are adapted to engage and grip a tab member and to suspend the clip therefrom. The bent ends 7 and 9 of the outside prongs 3 and 5 are bent slightly more than 90° clockwise from the horizontal axis of the clip and are preferably at an angle of approximately 7° in a clockwise direction to the vertical axis of the prongs (see FIG. 3) so as to assure retention of the clip on the tab when an article of appreciable weight is suspended therefrom. For the same purpose, the bent end 8 of prong 4 is bent slightly more than 90° counterclockwise from the horizontal axis of the clip at an angle of approximately 9° counterclockwise to the vertical axis of the prong. To facilitate engagement of the clip with a tab, the prongs extend angularly from the one end of the clip, the outside prongs 3 and 5 being at an angle of about 7° in the preferred embodiment as shown in FIG. 3 and the center prong at an angle of about 6°. Since the center prong has been found to yield more easily than the two side prongs, this prong is provided with a slightly more acute angle than the outside prongs. The tip portion 10 of the bent end portion 8 is rebent to facilitate engagement of the clip with a tab member, i.e., snapping the clip into position on the tab. This angle will be approximately 40° counterclockwise from the horizontal axis (as shown in FIG. 3) although this angle can vary to a considerable extent depending upon the desired use of the clip.

Each of the prongs has longitudinally extending ribs 11, 12, and 13 thereon to increase the strength thereof. Rib 12 on center prong 4 extends over the bent end portion 8, as shown at 14, whereas ribs 11 and 12 do not extend over bent ends 7 and 9. By such construction, the strength of the center prong is increased to an extent where it is approximately the same as that of the outside prongs combined. The configuration of the ribs is slightly arcuate as shown in FIG. 4.

Referring now to FIGS. 5, 7 and 8, a support plate 20 is illustrated with a looped tab member 21 to which the hanger clip can be attached, as shown in FIGS. 7 and 8. The clip engages the looped tab so as to be centrally positioned thereon with center prong 5 being positioned approximately in the center of loop 21.

After a period of use, the looped tab 21 will flatten locally at the points where gripped by prongs 3 and 5 as shown in somewhat exaggerated form at 22 and 23 in

FIG. 6. This will occur due to the suspension of a heavy load and will enable the bent ends of the outside prongs to grip the looped tab more firmly thereby providing a more secure suspension means.

In actual installation, the support plate will be the underside of a steel floor (see FIG. 10). The looped tabs shown in FIG. 5 are provided at established intervals across the length of the floor and are formed by lancing of the floor. By such construction, the hanger clips can be attached to the looped tabs wherever desired across the length and width of the floor thereby rendering the hanger clip assembly of this invention extremely versatile in its use.

As shown in FIG. 9, the clip and support plate assembly is installed by attaching the clip to the tab and thereafter covering such with a layer of approximately 2" in thickness of a sprayed acoustical and fireproofing asbestos material 24. A hanger 25 has been inserted in opening 6 for supporting piping, conduits, etc.

It is thus seen that the objects of this invention have been achieved by the provision of a relatively simple hanger clip which can easily be installed without obstructing or delaying other work which is being performed and which is capable of placement in various arrangements to meet the requirements of a particular job.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I, therefore, particularly point out and distinctly claim as my invention:

1. A hanger clip for supporting ceilings, light fixtures, piping and the like comprising a strip of resilient sheet material having a plurality of prongs angularly extending from the one end thereof and an opening extending therethrough adjacent the opposite end to receive a hanger or the like therein, said prongs having bent end portions adapted to engage and grip securely a tab member and to suspend the clip therefrom, at least one of said prongs and the bent end portion thereon being oppositely inclined from the other prongs and bent end portions, said oppositely inclined end portion being rebent at the tip to facilitate engagement of said clip with a tab member.

2. The hanger clip of claim 1 comprising three angularly extending prongs.

3. The hanger clip of claim 1 in which said prongs have longitudinally extending ribs thereon.

4. The hanger clip of claim 3 in which the rib on said prong with the oppositely inclined bent end extends over said bent end portion.

5. The hanger clip of claim 2 in which each of said prongs has longitudinally extending ribs thereon, and the rib on the center prong extends over said bent end portion.

6. The hanger clip of claim 2 in which the bent end portions of the outside prongs are at an angle of approximately 7° to the vertical axis, and the bent end portion of the center prong is at an angle of approximately 9° to the vertical axis.

7. The hanger clip of claim 2 in which the outside prongs extend at an angle of about 7° and the center prong is at an angle of about 6°.

8. A hanger clip for supporting ceilings, light fixtures, piping and the like comprising a strip of resilient sheet material, three prongs angularly extending from the one

end thereof and an opening extending therethrough adjacent the opposite end to receive a hanger or the like, said prongs having slightly negatively angled bent end portions adapted to engage and grip securely a tab member and to suspend the clip therefrom, the center prong and bent end portion thereon being oppositely inclined from the other prongs and bent end portions, a longitudinally extending rib on said center prong extending over said bent end, and said bent end portion of said center prong being rebent at the tip thereof to facilitate engagement of said clip with a tab member.

9. The hanger clip of claim 8 in which the outside prongs extend at an angle of about 7° and the center prong is at an angle of about 6°.

10. The combination of a hanger clip for supporting ceilings, light fixtures, piping and the like and a supporting plate with a looped tab member therein, said clip comprising a strip of resilient sheet material having three prongs angularly extending from one end thereof and an opening extending therethrough adjacent the opposite end, a hanger disposed within said opening, said prongs having negatively angled bent end portions, said bent end portions engaging and gripping securely said looped tab member to suspend said clip therefrom, the center prong and bent end portion thereon being oppositely inclined from the outside prongs and bent end portions thereon, said bent end portion of the center prong being rebent at the tip thereof to facilitate engagement with said looped tab member.

11. A hanger clip adapted to be secured to a suspension loop, comprising a sheet metal body portion, three fingers extending generally parallel to each other in the same general direction from one end of said body portion, the two outermost said fingers having end portions bent in the same direction and the center finger having its end portion bent in the opposite direction thereby to grip such suspension loop therebetween, and means on said body portion for suspending an article therefrom.

12. The clip of claim 11, wherein said end portions of said fingers are thus bent more than 90 degrees, and said bent end portion of said center finger is further rebent to project beyond said two outermost fingers for initial guiding engagement with such loop.

13. A hanger clip adapted to be secured to a suspension means comprising a strip of resilient sheet material, a plurality of fingers extending generally parallel to each other in the same general direction from one end of said strip, said fingers having bent end portions adapted to engage and grip securely such suspension means to suspend the clip therefrom, at least one of said fingers and the bent end portion thereon being oppositely inclined from the other fingers and bent end portions, and means on said strip for suspending an article therefrom.

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