United States Patent

Helderman

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[45] **May 30, 1972**

[54] SUSPENSION CLIP STRUCTURE AND APPARATUS AND METHOD FOR SECURING SAME TO A WORK SURFACE

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[52] **U.S. Cl.** **29/254,** 227/10, 269/19

[51] **Int. Cl.** **B25c 1/10,** B23q 3/16, B23p 11/00

[58] **Field of Search** 227/9–11; 29/254, 29/526; 33/221; 269/19

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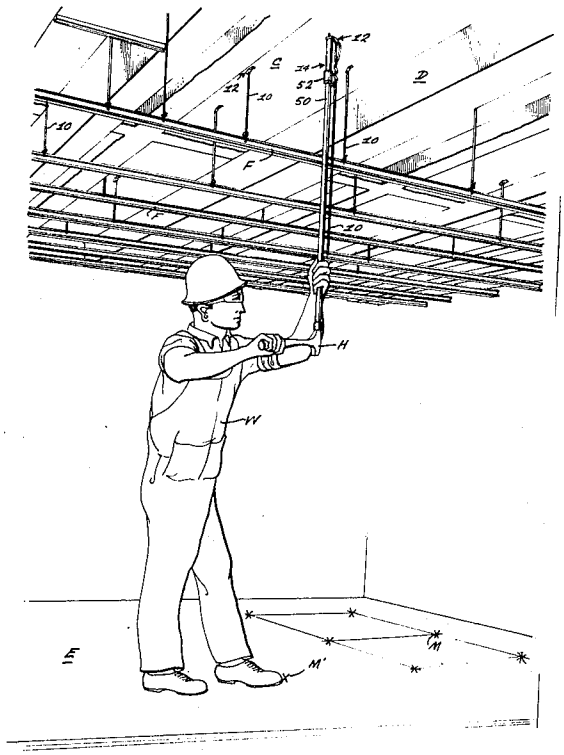
[57] **ABSTRACT**

A clip structure to be secured to a work surface by a power actuated tool having a cylindrical barrel member from which a fastener element is driven, the clip structure including a center portion and a projecting retaining flange having spaced corners engaging the side wall of the barrel member at at least two peripheral points thereon having a chordal spacing less than the diameter of the barrel member, and including a projecting attachment flange engaging the barrel member side wall substantially oppositely from the engagement by the retaining flange to loosely retain the clip structure on the barrel member, the attachment flange including a leg portion extending outwardly from the barrel member for pre-assembly with a hanger wire that will not interfere with subsequent disposition of the clip structure on the barrel member. The center portion of the clip structure may be apertured to engage the tip end of the stud element extending outwardly from the barrel member of certain types of tools. Additionally, the tool may be provided with an extension element whereby the tool, with a clip structure placed thereon, may be manipulated to locate the clip structure against a ceiling and then actuated by a workman standing on the floor beneath the ceiling, the preassembled hanger wire depending vertically from the clip structure to form a plumb line providing vertical reference for aligning the tool therewith.

15 Claims, 6 Drawing Figures



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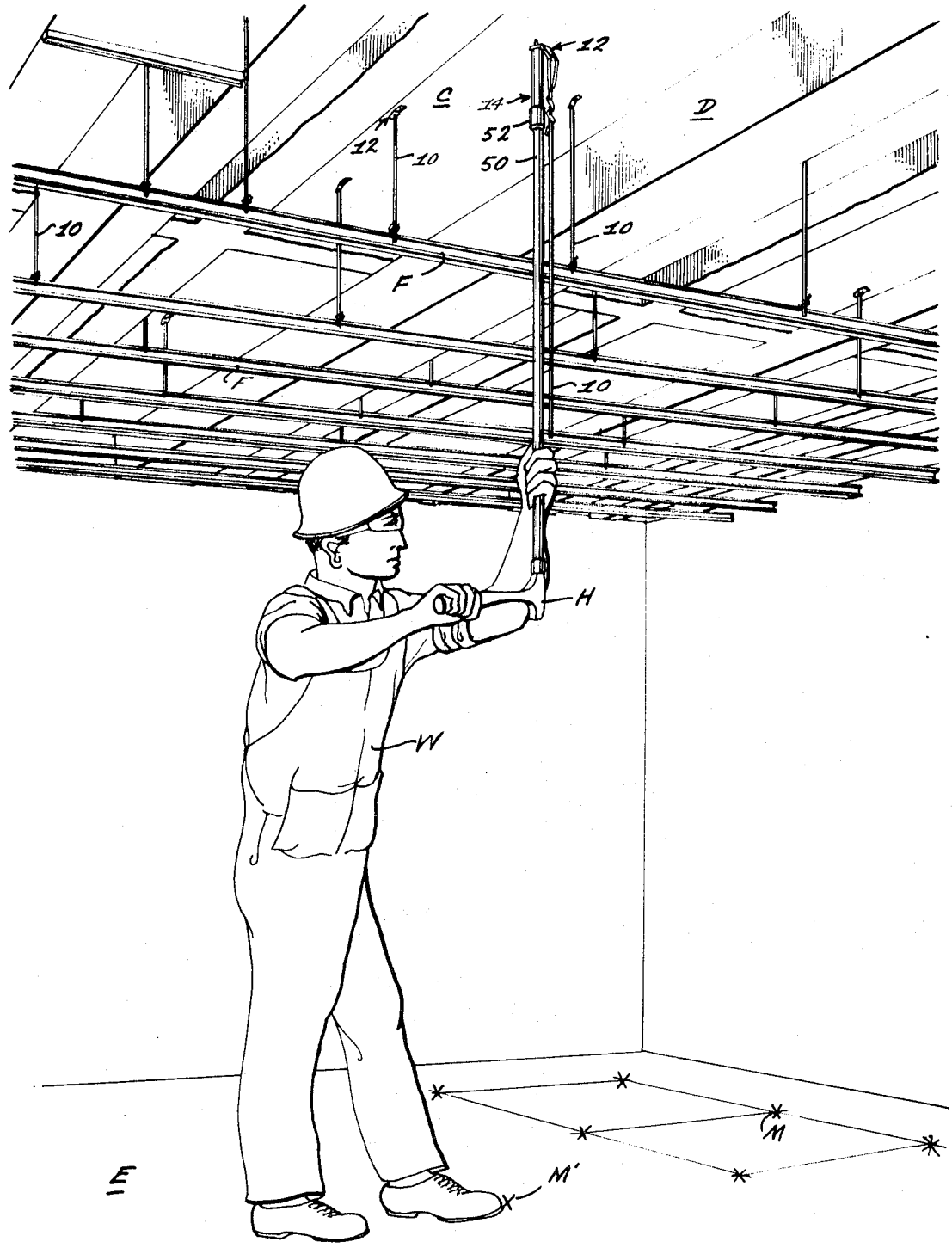

Fig. 1

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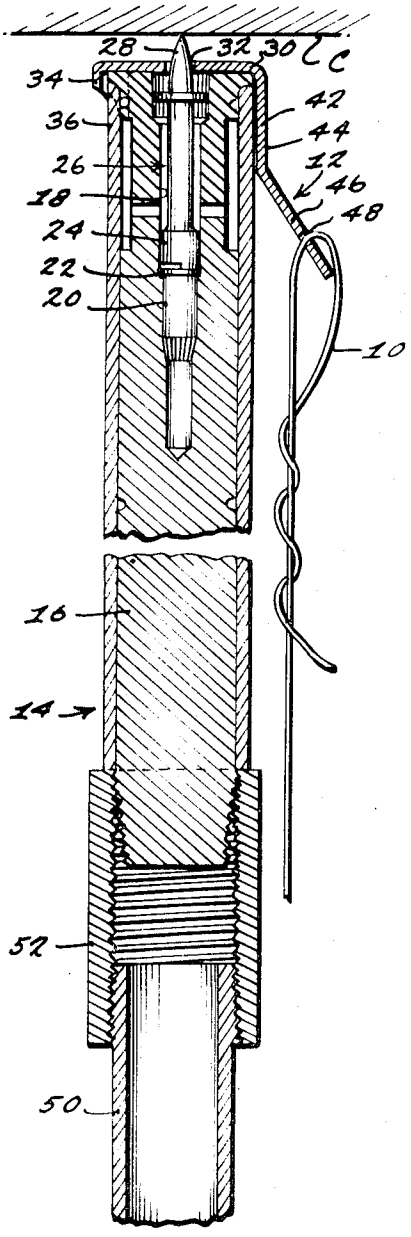

Fig. 2

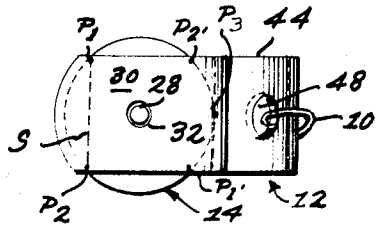

Fig. 3

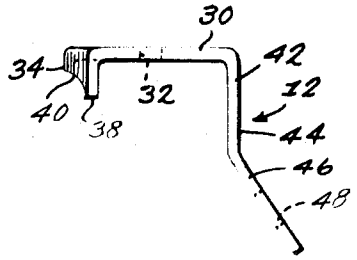

Fig. 4

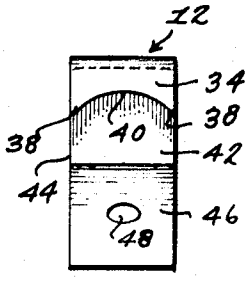

Fig. 5

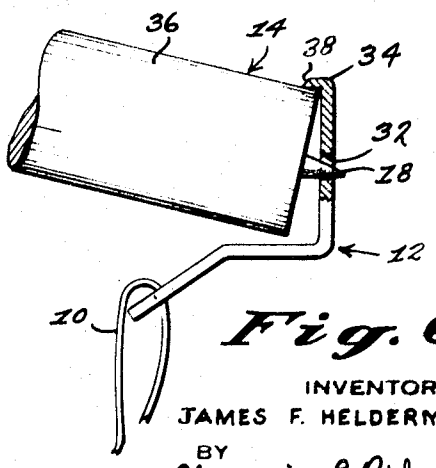

Fig. 6

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SUSPENSION CLIP STRUCTURE AND APPARATUS AND METHOD FOR SECURING SAME TO A WORK SURFACE

BACKGROUND OF THE INVENTION

This invention relates to clip structures which are secured to a work surface, and to the installation thereof by power actuated tools, particularly explosive actuated tools of the type described and claimed in U.S. Pat. No. 3,172,123, issued Mar. 9, 1965, in which a fastener stud element is disposed within the barrel member of the tool with its tip end extending outwardly beyond the barrel member so that this tip end can be struck against the work piece to cause inward movement of the stud element in the barrel member to ignite an explosive charge with the resulting explosion driving the stud element into the work surface.

Clip structures installed by power actuated tools or the like are usually placed on the tool at the point thereof at which the stud element is driven therefrom, and the tool is then manipulated to locate the clip structure against the work surface whereupon the tool is actuated to drive the stud element into the work piece to secure the clip structure thereat. The clip structure must be retained on the tool with sufficient tenacity to permit substantial manipulation of the tool without the clip structure becoming inadvertently separated therefrom before it can be secured to the work surface as, for example, in situations where the work surface is relatively inaccessible, or when the tool must be held at a substantial inclination to vertical (i.e., held horizontally to secure the clip structure to a vertical wall).

Therefore, there are a number of prior art disclosures which provide tools of this sort with apparatus designed for positively holding the clip structure on the tool by clamping it in place with a mechanically biased element, or by establishing a magnetic field having sufficient attraction to hold the clip structure in place. All of these prior art disclosures, however, require modifying the tool with an attachment that increases the cost of the tool, and often limits the number of different clip structures that can be used with the tool and may even prohibit using the tool in applications where it must be inserted in a very small area to drive the stud element at a desired point.

Additionally, it has been proposed heretofore to form the clip structure with flanges having a substantial resiliency that imposes a grip on the tool when partially expanded as the clip structure is forced onto the tool. These clip structures are sometimes relatively difficult to place on the tool, and the inherent variation in the resiliency of the flanges on different clip structures may adversely affect either the holding characteristics of the clip structure or the effort required to place it on the tool.

A common application of clip structures of the type discussed above is in the installation of suspended or "finish" ceilings which are supported by a hanger wire attached to the clip structure after it is secured to the structural ceiling, the cavity between the structural ceiling and the finish ceiling providing an enclosed area in which various utility systems such as heating ducts, plumbing, etc., can be accommodated. A common method employed to install these finish ceilings has been to construct two scaffolds, one built to a height that permits a workman to stand thereon and reach the structural ceiling with a power actuated tool having a clip structure placed thereon as previously discussed, and the other built to a lower height to facilitate operations related to assembling the finish ceiling. Also, since this two-scaffold method is obviously relatively expensive and time consuming, it is common practice to construct only the lower scaffold and then set a ladder thereon for use by the workman when he secures the clip structure to the structural ceiling and then attaches the hanger wire to the installed clip structure. While this method is somewhat less expensive than the former, it has the additional disadvantage of possibly creating unsafe working conditions for the workman.

Moreover, regardless of what method is used to secure the clip structure to the structural ceiling, the installation procedure heretofore followed has included the step of attaching each hanger wire to a clip structure after the latter has been secured in place, this step being necessitated by the fact that the physical characteristics of the clip structure and the power actuated tool on which it is placed for installation thereby would not accommodate a hanger wire preassembled with the clip structure.

According to the present invention, a clip structure is provided, together with apparatus for installation thereof, that substantially eliminates the foregoing difficulties encountered with prior equipment of this type. The clip structure of the present invention can be readily placed on the power actuated tool by which it is to be installed, and retained thereon during such installation; and the clip structure may be preassembled with a hanger wire and installed from a position well below the structural ceiling without requiring a second scaffold or ladder as was previously the case.

SUMMARY OF THE INVENTION

According to the present invention, a clip structure is provided which includes a center portion for extension across the muzzle end of the cylindrical barrel member of a power actuated tool, a retaining flange portion projecting from the center portion to engage the side wall of the barrel member at at least two peripheral points having a chordal spacing that is less than the diameter of the barrel member, and an attachment flange for attachment of a hanger wire, the attachment flange engaging the barrel member side wall at a peripheral location thereon that is between two points located diametrically opposite the points of engagement by the retaining flange. Thus, the clip structure engages the barrel member side wall at at least three points which are spaced in such a way that the clip structure will be loosely retained on the end of the barrel member and prevented from sliding sideways off the barrel member whereby the clip structure can be readily placed on the barrel member yet will be retained thereon at substantially all working dispositions of the barrel member.

Additionally, the attachment flange is formed to permit a hanger wire to be secured thereto at a spaced location from the barrel member whereby this hanger wire can be preassembled with the clip structure and can hang loosely therefrom without interfering in any way with the disposition of the clip structure on the end of the barrel member. Aside from the advantage of being able to preassemble the hanger wire on the clip structure, the hanger wire, by virtue of its ability to hang loosely from the clip structure as it is retained on the tool, can be used to form a plumb line providing a convenient vertical reference for the workman as he manipulates the tool for locating the clip structure against a ceiling.

In the preferred embodiment of the present invention, the center portion of the clip structure is provided with an aperture therein which will receive the outwardly extending tip end of a stud element disposed in the barrel member of an explosive actuated tool of the type described in the aforementioned U.S. Pat. No. 3,172,123, this reception of the stud element tip end serving to augment the retention of the clip structure on the barrel member by the retaining flange portion and attachment flange portion as previously mentioned. The retaining flange portion preferably projects from the center portion in substantially perpendicular relation thereto and has an arcuate shape with two arcuately spaced corners presented at the extending edge of the retaining flange to provide the aforementioned peripheral points of barrel engagement. Also, this extending edge is recessed between the arcuately spaced corners to permit the corners to remain in contact with the barrel member side wall even when the barrel member is inclined substantially from vertical and the clip structure pivots with respect to the barrel member about the corners. The attachment flange portion preferably includes a first leg that extends substantially perpendicular from the center por-

tion for disposition at the aforementioned peripheral portion of the barrel member, and a second leg that extends angularly from the extending end of the first leg in spaced relation to the barrel member side wall and that is formed with an opening at which a hanger wire may be attached to loosely hang therefrom.

As previously mentioned, the preassembled hanger wire provides a useful vertical reference when the clip structure is to be installed in a structural ceiling, and the present invention also provides additionally for permitting a workman to install the clip structure in the ceiling as he stands on the floor, which may be substantially spaced from the ceiling, thereby eliminating the previously described complex scaffold arrangements heretofore employed for similar installations.

According to the present invention, a clip structure is mounted on the muzzle end of the barrel member of the tool and loosely retained thereat, and the other end of the barrel member has an extension element of selected length detachably secured thereto whereby the workman can manipulate the tool, while standing on the floor, to dispose the retained clip structure adjacent the ceiling with the loosely attached hanger wire depending freely from the clip structure under the influence of gravity. The workman may use the hanger wire as a vertical reference to align the barrel member and the extension element therewith to assure a proper disposition of the tool for driving the fastener perpendicularly into the ceiling, and then actuate the tool to drive the fastener and install the clip structure and hanger wire at the ceiling. Also, where a plurality of clip structures are to be installed in the ceiling in a predetermined pattern, as for example when the framework of a finish ceiling is to be supported by the hanger wires depending from the clip structures, the workman may lay out on the floor a pattern of visible marks at each location where it is desired to support the finish ceiling framework, and then use these visible marks for reference points near which he should stand as he manipulates the tool while aligning it with the plumb line provided by the hanger wire. Thus, the combination of the visible floor markings and the vertical reference provided by the hanger wire furnish the workman with a dependable guide by which he can install the clip structures in a predetermined pattern without first having to mark the ceiling to indicate this pattern whereby the entire installation procedure can be accomplished quickly and easily from the floor.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view illustrating a workman installing a clip structure in a structural ceiling with a power actuated tool in accordance with the present invention;

FIG. 2 is a vertical section taken through a tool similar to the one illustrated in FIG. 1 and showing a preferred embodiment of the clip structure retained at the muzzle end of the barrel member of the tool;

FIG. 3 is a plan view of the clip structure illustrated in FIG. 2 as it is being retained on the muzzle end of the tool;

FIG. 4 is a side view of the clip structure illustrated in FIG. 3;

FIG. 5 is a front view of the clip structure illustrated in FIG. 3; and

FIG. 6 is a detail view showing the disposition of the clip structure at the end of the tool when it is held with the muzzle end thereof pointing in a downward direction.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in detail to the accompanying drawings, FIG. 1 illustrates a typical structural ceiling C and a framework F which will be used to support a finish ceiling spaced beneath the structural ceiling C to accommodate therebetween the various utility systems (i.e., ducts D) generally disposed in this manner in modern constructions, the framework F being supported beneath the structural ceiling C by depending hanger wires **10** attached to clip structures **12** which have been installed in the structural ceiling C. The workman W is shown as he is about to install a clip structure **12** with a power actuated tool **14** in accordance with the present invention as will be described in greater detail presently.

As best seen in FIG. **2**, the tool **14** is an explosive actuated tool of the type described in the aforementioned U.S. Pat. No. 3,172,123, and includes a cylindrical barrel member **16** formed with a bore **18** in which a cartridge **20** is disposed with the ignition rim **22** thereof facing outwardly so as to be adjacent the stepped head portion **24** of a fastener stud element **26** which has also been inserted in the bore **18**, the length of the stud element **26** being such that the tip end portion **28** thereof extends outwardly beyond the end of the barrel member **16**. To actuate the tool **14**, the extending tip end portion **28** of the stud element **26** is held against a work surface, in this instance the structural ceiling C, and the barrel member **16** is then struck with a hammer or the like so as to be moved toward the ceiling C thereby causing inward movement of the stud element **26** whereupon the stepped head portion **24** thereof will have sufficient impact with the ignition rim **22** to ignite the cartridge **20** with the resulting explosion driving the stud element **26** from the bore **18** and into the ceiling C, all as described in greater detail in the aforementioned U.S. Pat. No. 3,172,123.

The clip structure **12** which is to be installed in the structural ceiling C is designed to be loosely retained on the barrel member **16** at the muzzle end thereof as seen in FIG. **2**, and this clip structure **12** includes a center portion **30** which extends across the end face of the barrel member **16**, and which is provided with a central aperture **32** that will receive and engage the tip end portion **28** of the stud element **26**. Projecting in perpendicular relation from the center portion **32** is a retaining flange **34** which has an arcuate shape (FIG. **3**) corresponding generally to the contour of the exterior side wall **36** of the barrel member **16**, and which has two arcuately spaced corners **38** presented at the extending edge thereof, this edge being provided with a circular recess **40** between the corners **38**. Also projecting in perpendicular relation from the center portion **30** is a substantially flat first leg **42** of an attachment flange **44** which includes a second leg **46** that extends angularly from the extending end of the first leg **42** in spaced relation to the barrel member side wall **36**. The second leg **46** has an opening **48** formed therein through which a hanger wire **10** is looped and attached thereat, the disposition of the opening **48** being such that the hanger wire **10** can hang freely from the second leg **46** under the influence of gravity and without interfering with the disposition of the clip structure **12** on the barrel member **16** as best seen in FIG. **2**.

Because of this unique construction of the clip structure **12** it will be loosely retained on the barrel member **16** even if the barrel member **16** is inclined substantially from vertical, and regardless of whether or not the tool with which it is used is of the type having a stud element tip end which extends outwardly beyond the barrel member. To understand this unique loose retention of the clip structure **12** on the barrel member **16**, attention is directed particularly to FIG. **3** where the retaining contact between the clip structure and the side wall **36** of the barrel member **16** is best illustrated. The two arcuately spaced corners **38** of the retaining flange **34** engage the barrel member side wall **36** at two peripheral points **P1** and **P2**, which have a chordal spacing, identified by reference line S, that is less than the diameter of the barrel member **16**, and the attachment flange **44** engages the barrel member side wall **36** at a peripheral location thereon that is between two points **P1'** and **P2'** located diametrically opposite the points **P1** and **P2**. In the disclosed embodiment, the attachment flange **44** engages the barrel member side wall **36** substantially at a point **P3** located midway between the points **P1'** and **P2'**. However, since the clip structure **12** is purposely designed to have a relatively loose fit on the barrel member **16**, there will not be a simultaneous engagement at any time of all three points **P1**, **P2**, and **P3**, but engagement of the attachment flange **44** anywhere between points **P1'** and **P2'** as the clip structure **12**

begins to move sideways will serve to retain the clip structure 12 against separation from the barrel member 16 because it will be observed in FIG. 3 that regardless of which way the clip structure begins to move in a sideways direction with respect to the barrel member 16, there will always be two points of engagement between the clip structure 12 and the barrel member 16 which have a chordal spacing less than the diameter of the barrel member 16 and, hence, will prevent the clip structure from sliding off the barrel member 16. For example, if, in FIG. 3, the clip structure 12 began to move in an upward direction, movement in this direction would be opposed at points P2 and P3, and even if the attachment flange 44 is slightly spaced from the barrel member side wall 36, the point P3 will still fall between points P1′ and P2′.

It will be understood, of course, that when the clip structure 12 is used with a tool 12 having a stud element tip end portion 28 extending outwardly beyond the barrel member 16 as seen in FIG. 2, the engagement of this tip end portion 28 by the aperture 32 in the center portion of the clip structure 12 also acts to retain the clip structure 12 against sideways movement relative to the barrel member 16. In addition, this engagement by the aperture 32 also assists in retaining the clip structure 12 against sliding movement thereof endways off the barrel member 16 even if the latter is held with its muzzle end extending in a downward direction as seen in FIG. 6. In FIG. 6, it will be noted that the attachment flange 44 and the attached hanger wire 10 are disposed beneath the retaining flange 34, and this is because the weight of these two elements are greater than the weight of the retaining flange 34 and will thereby always cause the loose fitting clip structure 12 to slide around or rotate with respect to the barrel member 16 to this position whenever the barrel member 16 is inclined from vertical. Moreover, as the barrel member 16 is tilted away from an upright vertical position, the clip structure 12, because of the weight of the attachment flange 44 and the hanger wire 10, will begin to pivot about the corners 38 as seen in FIG. 6, it being noted that the recess 40 in retaining flange 34 will permit this pivoting without resulting in the corners 38 becoming disengaged from the barrel member side wall 36. These corners 38 have sufficient frictional purchase on the barrel member side wall 36 to prevent the clip structure 12 from sliding off the end of the barrel member 16 during the initial phase of this pivoting motion, and as this pivoting continues the aperture 32 in the center portion 30 of the clip structure 12 will then positively engage the stud element tip portion 28 as seen in FIG. 6 and prevent further pivoting of the clip structure 12 whereupon the weight of the attachment flange 44 and the hanger wire 10 will act to wedge the aperture 32 against the stud element tip portion 28 with sufficient force to maintain the clip structure 12 on the barrel member 16 almost until the latter is inclined to a vertical disposition with the muzzle end thereof facing downwardly. Thus, as the inclination of the barrel member 16 increases, the force that is applied to the wedging action becomes greater so that the clip structure 12 will be retained on the barrel member 16 and substantially all working dispositions thereof, only the downwardly directed vertical disposition, or almost vertical disposition, of the barrel member 16 being excepted.

In accordance with the present invention, a clip structure 12 having a hanger wire 10 preassembled therewith can be installed in a structural ceiling C by a workman W standing on a floor surface E which is substantially spaced from the structural ceiling C as illustrated in FIG. 1. To enable the workman W to locate the muzzle end of the tool 14 against the ceiling C, the closed end of the barrel member 16 has an elongated extension element 50 detachably secured thereto by a threaded sleeve 52 (FIG. 2), the extension element 50 being composed of metal or similar material which will transmit an impact force applied endwise thereto and being of a selected convenient length suitable for reaching the height of the ceiling C.

Before installing any clip structures 12 in the ceiling C, the workman lays out on the floor E a predetermined pattern of visible marks M, some of which are illustrated in FIG. 1, the pattern being one which will assure a proper spacing and number of clip structure locations to support the framework F at the ceiling C. Then, the tool 14 is loaded with a cartridge 20 and a stud element 26 as has been previously described, and a clip structure 12 with a preassembled hanger wire is placed on the tool 14 as best seen in FIG. 2. Using one of the marks M as a reference point (i.e., M′ in FIG. 1), the workman stands thereat and manipulates the tool 14 to dispose the clip structure 12 adjacent the ceiling C while aligning the tool 14 and extension element 50 in substantially parallel relation with the plumb line presented by the hanger wire 10 as it hangs freely from the clip structure 12. With the tool thus vertically aligned and the stud element tip end 28 held against the ceiling C, the workman W strikes the lower end of the extension element 50 with a hammer H so that the barrel member 16 is caused to move toward the ceiling C thereby actuating the tool 14 which drives the stud element 26 through the clip structure 12 and into the ceiling C for installation thereat. It will be noted that by standing adjacent one of the marks M, and by aligning the tool 14 and extension member 50 with the hanger wire 10, substantial accuracy of the placement of the clip structure 12 is assured, and no preliminary marking of the ceiling C is required.

While only one embodiment of the clip structure 12 has been specifically described, it is to be understood that other forms thereof may be made without departing from the scope of the present invention which has been described above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined by the appended claims.

I claim:

1. A clip structure to be secured to a work surface by a power actuated tool having a cylindrical barrel member from which a fastener element is driven, said clip structure including a center portion for extension across the end face of said barrel member from which said fastener is driven through said center portion to attach said clip structure to a work surface, a retaining flange portion extending from said center portion and engaging the side wall of said barrel member at at least two peripheral points thereon, said peripheral points having a chordal spacing less than the diameter of said barrel member, and an attachment portion extending from said center portion for attaching a hanger wire to said clip structure, said attachment portion engaging said barrel member side wall at a peripheral location that is between two points located diametrically opposite said points of engagement by said flange portion whereby said clip structure will be loosely retained on said barrel member.

2. A clip structure as defined in claim 1 and further characterized in that said attachment portion includes a first leg that extends substantially perpendicular from said center portion for normal disposition at said peripheral portion of said barrel member wall, and a second leg that extends angularly from the extending end of said first leg and in spaced relation to said barrel member wall, said second leg including means for attaching a hanger wire thereto whereby said hanger wire may be preassembled with said clip structure without interfering with subsequent disposition of said clip structure on said barrel.

3. A clip structure to be secured to a work surface by a power actuated tool having a cylindrical barrel member from which a fastener element is driven and having an elongated impact-force transmitting element of selected length detachably secured to said barrel member in longitudinal alignment therewith for extension from the end thereof opposite the end at which said fastener element is driven, said clip structure including a center portion for extension across the end face of said barrel member from which said fastener is driven, a retaining flange portion extending from said center portion and engaging the side wall of said barrel member at at least two peripheral points having a chordal spacing less than the diameter of said barrel member, and an attachment portion including a first leg that extends substantially perpendicu-

larly from said center portion for engaging said barrel member side wall at a peripheral location that is between two points located diametrically opposite said points of engagement by said flange portion whereby said clip structure will be loosely retained on said barrel member, said attachment portion including a second leg that extends angularly from the extending end of said first leg and in spaced relation to said barrel member wall, said second leg including attaching means formed to permit a loose connection of a hanger wire thereat whereby said hanger wire will assume a vertical disposition when said tool is held for securing said clip structure to a ceiling or the like and thereby will provide a plumb line for aligning said barrel member and impact transmitting element therewith.

4. A clip structure as defined in claim **1** and further characterized in that said retaining flange portion projects substantially perpendicularly from said center portion and has an arcuate shape with two arcuately spaced corners presented at the extending edge of said retaining flange portion to provide said peripheral points of barrel member engagement.

5. A clip structure as defined in claim **4** and further characterized in that said extending edge of said retaining flange portion is recessed between said arcuately spaced corners whereby said corners will remain in contact with said barrel member side wall when said tool is inclined substantially from a vertical disposition and said clip structure pivots with respect to said barrel member about said corners.

6. A clip structure to be secured to a work surface by a power actuated tool having a barrel member in which a fastener stud element to be driven by the tool is disposed with the tip end of the stud element extending outwardly beyond one end face of said barrel member, said clip structure including a portion engaging the side wall of said barrel member, and a portion engaging said stud element tip end for loosely retaining said clip structure on said barrel member at substantially all working dispositions of the latter, said clip structure being retained in a position for driving said stud element therethrough to attach said clip structure to a work surface.

7. A clip structure as defined in claim **6** and further characterized in that said clip structure includes an attachment portion provided with means disposed in spaced relation to said barrel member side wall for attaching a hanger wire thereat, said spacing readily accommodating a hanger wire attached to said clip structure when the latter is retained in place on said barrel member.

8. A clip structure as defined in claim **6** and further characterized in that said stud element engaging portion extends across said barrel member end face and is provided with an aperture in which said stud element tip end is received, and said side wall engaging portion includes a retaining flange projecting from said stud element engaging portion for engaging said barrel member side wall.

9. A clip structure as defined in claim **8** and further characterized in that said retaining flange and said barrel member side wall have corresponding configurations for engagement of said barrel member side wall by said retaining flange.

10. A clip structure as defined in claim **8** and further characterized by an attachment portion projecting from said stud element engaging portion and including means for attaching a hanger wire thereto, said means being disposed in spaced relation to said barrel member to accommodate said hanger wire thereat when said clip structure is in place on said barrel member.

11. A clip structure as defined in claim **10** and further characterized in that said attachment portion includes an attachment flange depending from said stud element engaging portion diagonally opposite said retaining flange, said attachment flange having a first leg that depends from said stud element engaging portion along said barrel member side wall and a second leg that depends angularly from said first leg in spaced relation to said barrel member side wall, said second leg being provided with an opening through which an end of said hanger wire may be looped for attachment thereat.

12. Apparatus for securing a suspended support from an elevated work surface such as a ceiling, said apparatus comprising an explosive actuated tool including a barrel member in which a stud element to be driven by the tool is disposed with the tip end thereof extending outwardly beyond one end face of said barrel member, an elongated impact-force transmitting element of selected length detachably secured to said barrel member at the other end thereof and extending from said barrel member in longitudinal alignment therewith, a clip structure retained on said barrel member, said clip structure including an attachment portion providing means disposed in spaced relation to the side wall of said barrel member for attaching a hanger wire thereat, and a hanger wire attached to said attachment portion and disposed to hang substantially vertically therefrom when said tool is held at a disposition for installing said clip structure at said elevated work surface whereby said hanger wire provides a plumb line for aligning said tool therewith.

13. Apparatus for securing a suspended support as defined in claim **12** and further characterized in that said clip structure includes a center portion that is formed to extend across one end face of said barrel member and that is provided with an aperture to receive and engage said tip end of said stud element, and a retaining flange portion projecting from said center portion for engagement with the side wall of said barrel member, said retaining flange and said aperture engaging said barrel member side wall and said stud element tip end, respectively, for loosely retaining said clip structure on said barrel member at substantially all working dispositions thereof.

14. The combination of a power actuated tool including a barrel member having a nozzle end from which a fastener stud element is driven when said tool is actuated, said nozzle end of said barrel member being adapted to retain a clip structure thereon when said barrel member is disposed in a generally vertical position whereby said clip structure can be attached to a ceiling surface or the like by said driven stud element, an extension element detachably connected to said tool at the end thereof opposite said barrel member nozzle end and extending in longitudinal alignment therewith to facilitate locating said nozzle end adjacent said ceiling surface or the like, and means permitting said tool to be actuated from a position adjacent the extending end of said extension element whereby said clip structure can be attached to said ceiling surface or the like by an operator standing on the floor surface therebeneath.

15. The combination defined in claim **14** and further characterized in that said fastener stud element to be driven by said tool is disposed in said barrel member with the tip end of said stud element extending outwardly beyond said barrel member nozzle end, in that said tool is actuated by causing said stud element to move inwardly into said barrel member, and in that said extension element is a force-transmitting element which will transmit the force of an upward blow applied to the extending end thereof to said tool to cause inward movement of said stud element when the tip end thereof is held against said ceiling surface or the like and thereby actuate said tool.

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