

[54] SELF-ALIGNING JOIST HANGER FOR STRUCTURAL STEEL FRAMING

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[51] Int. Cl.² F16B 5/00

[58] Field of Search 403/13, 14, 189, 187, 190, 403/232, 231; 52/751, 752, 702, 665

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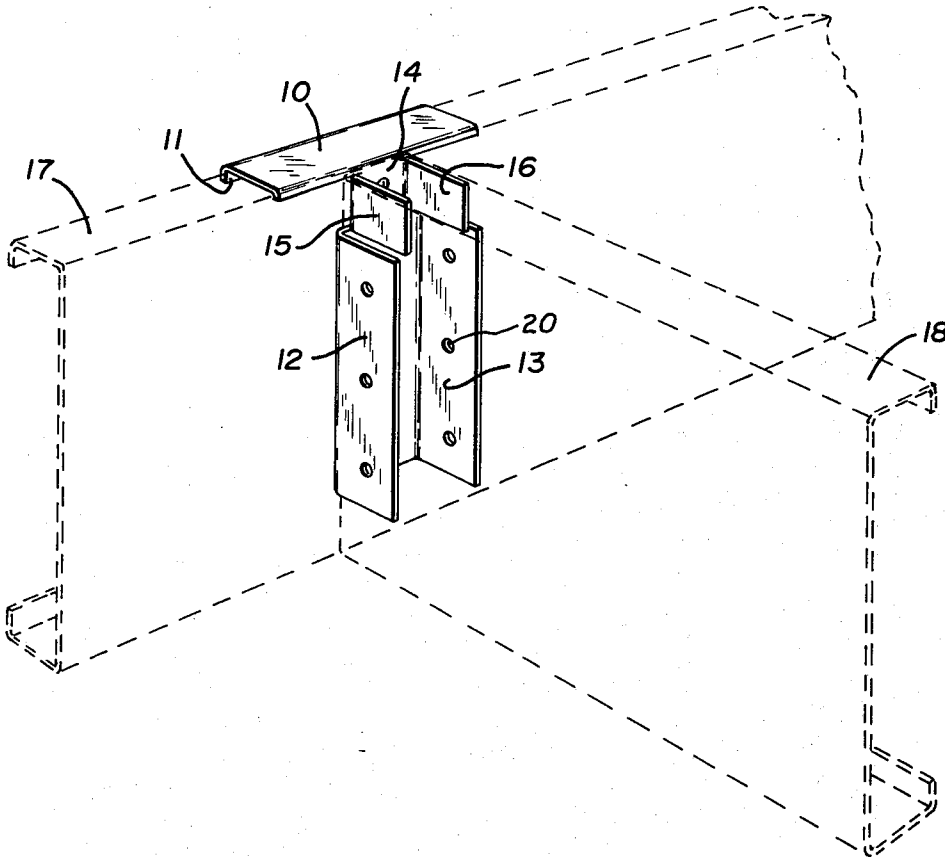
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[57] ABSTRACT

A hanger for mounting a hollow metal joist perpendicular to headers and the like is disclosed. The hanger has a U-shaped top flange for hanging the hanger over a header and the hanger also having a backplate with side flanges projected outward therefrom and with the side flanges each being divided from the backplate outward at a point intermediate to the top and bottom thereof with the upper portion of each of the two side flanges being spaced together in order that the hollow metal joist may rest on the upper portion of the side flanges while the joist is being attached to the remaining portion of at least one of the side flanges. The side flanges are not connected other than by the backplate thereby enabling them to accommodate any height joist.

2 Claims, 5 Drawing Figures



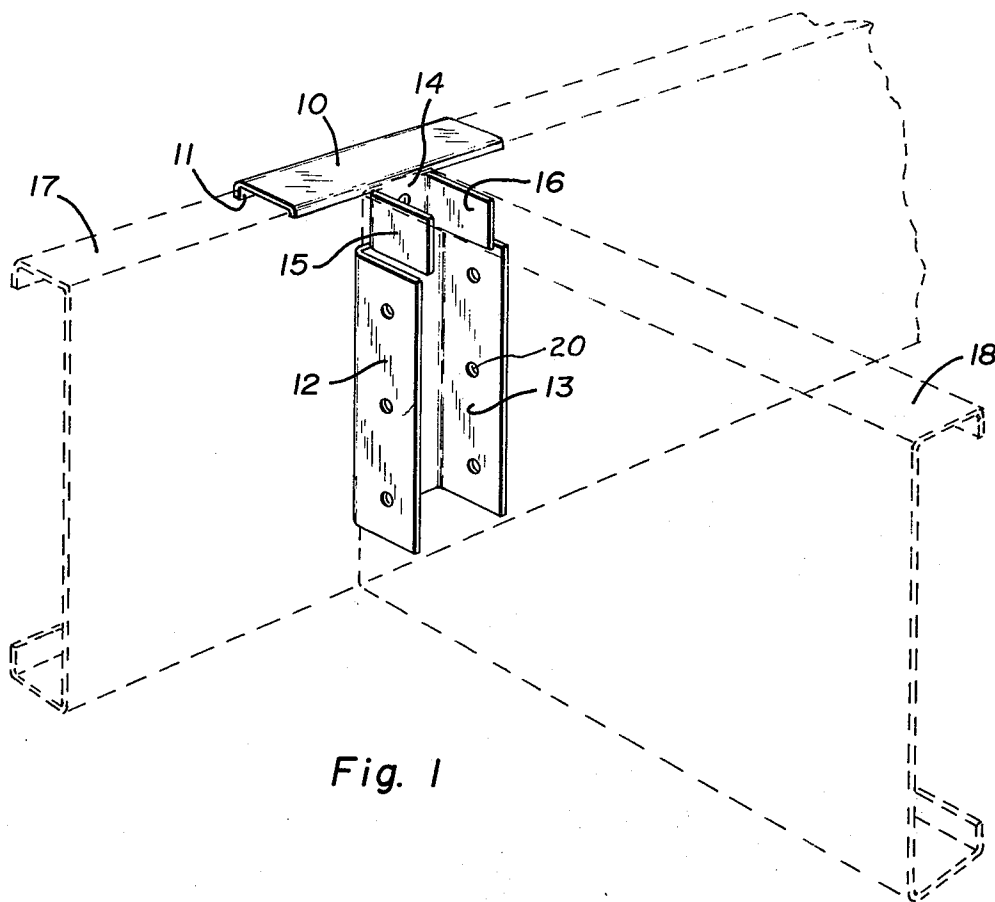


Fig. 1

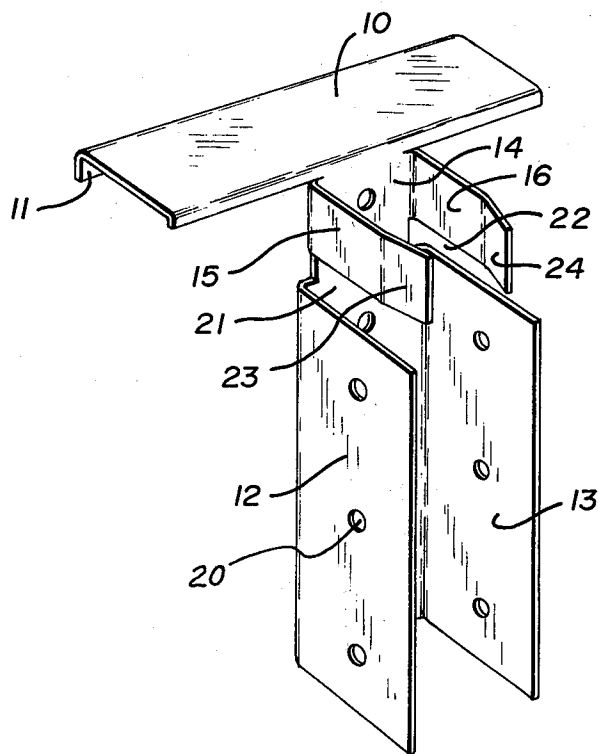


Fig. 2

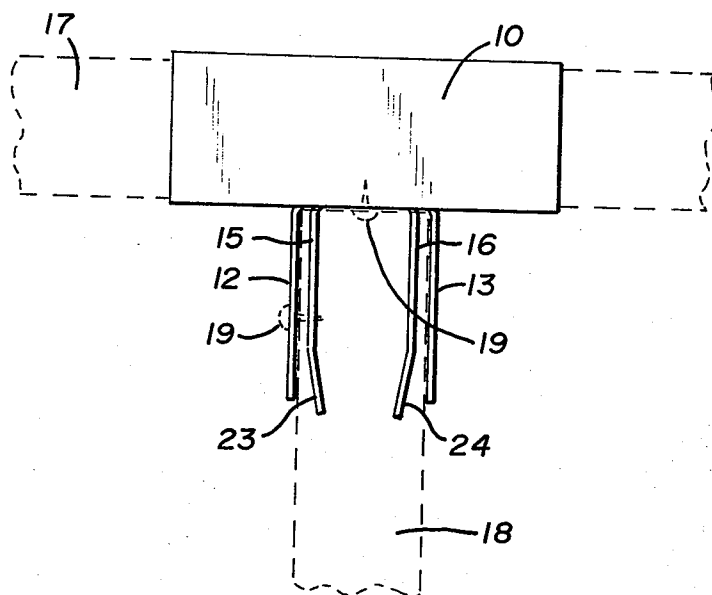


Fig. 3

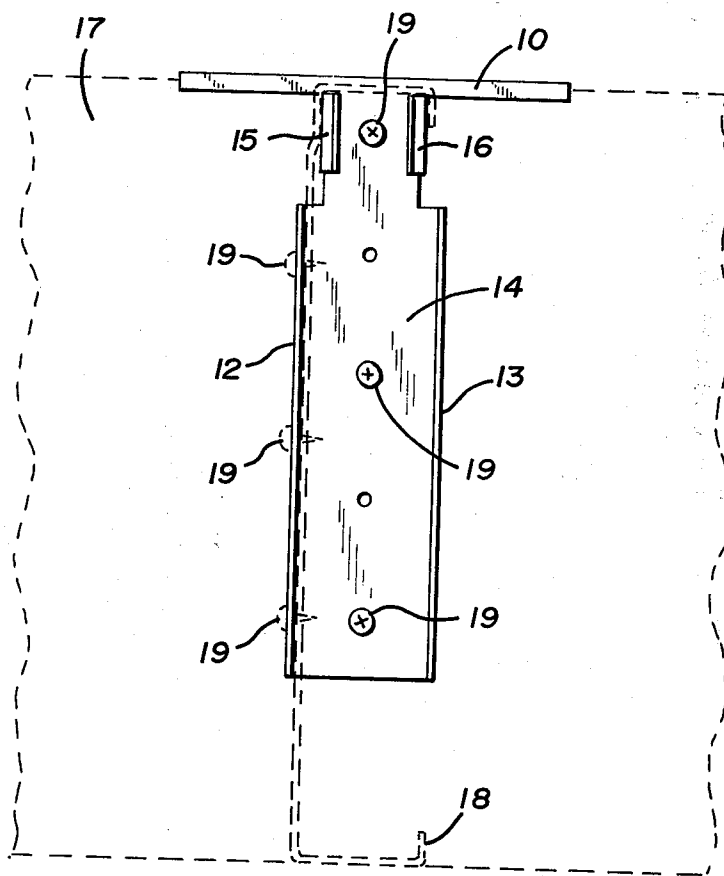
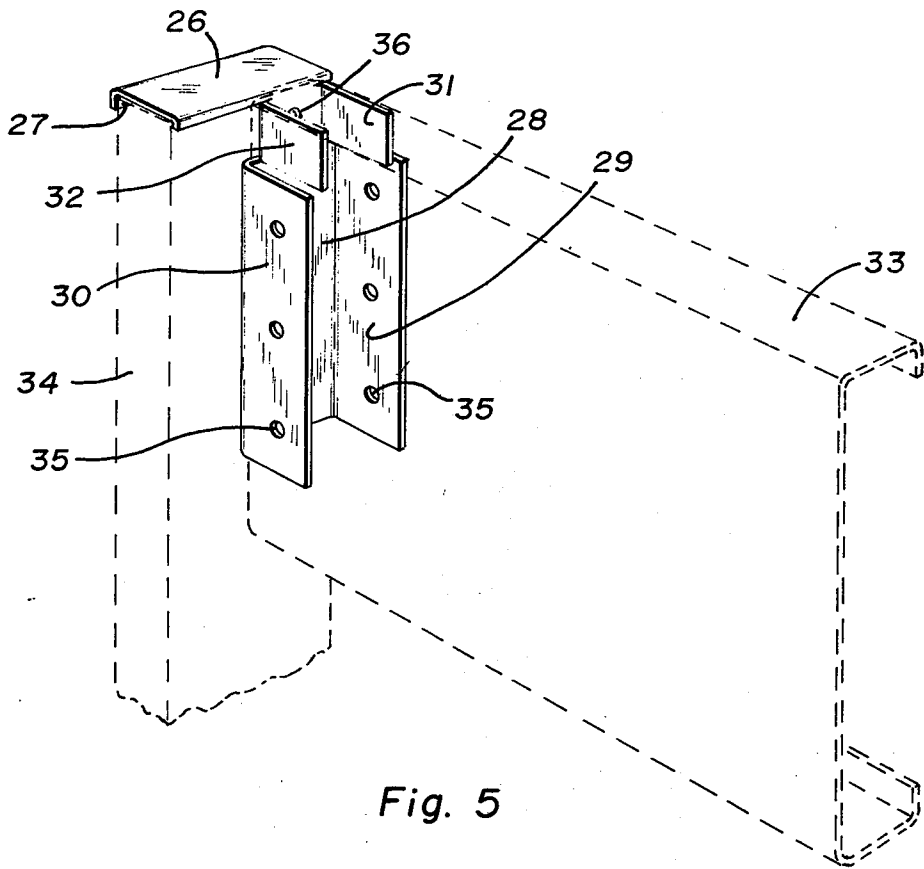


Fig. 4



SELF-ALIGNING JOIST HANGER FOR STRUCTURAL STEEL FRAMING

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a hanger for mounting hollow metal joists perpendicular to headers and the like. The hanger has a U-shaped top flange for hanging the hanger on the header and a backplate attached to the top flange with the sides of the backplate bent outward to form side flanges with the top portions of the side flanges spaced closer together to engage the upper portion of the hollow metal joist and the remaining side flanges used for attaching to the joist to hold it in place.

2. Description of the Prior Art

Many types of metal hangers exist for attaching hollow metal joists perpendicular to headers. These prior hangers, however, seem to be divided into two different design classes. The first such class is one in which the hangers have a U-shaped lip for hanging the hanger with side flanges terminating in a saddle arrangement whereupon the joist sits in the saddle while the side flanges are being attached to the joist. This type of hanger has one inherent difficulty. It will accommodate only one given size of joist if the top of the joist is to match the top of the header. In other words, if the joist has a height greater than that of the header, or if different height joists are used, then one size hanger cannot be used if the object is to have the top of the joist in the same plane with the top of the header.

The other type of basic design for a hanger is one having a U-shaped top flange for hanging the hanger with a backplate depending therefrom and with the sides of the backplate bent outward to form two parallel side flanges, unconnected except through the backplate, for attaching to the joist. While this type of hanger will accommodate any height joist, it does have one deficiency with respect to installation. The deficiency is that if one person is to install the joist and attach it to the header, then the installer must support the weight of the joist at its exact location while he goes about drilling and attaching the joist to the hanger. Small errors in this operation provide very poor alignment thus demonstrating the inherent disadvantage of this type of hanger. Prior hangers, therefore, all have disadvantages which have been overcome by the new and novel design of the present invention.

SUMMARY OF THE INVENTION

It is an object of this invention to provide a hanger for mounting hollow metal joists perpendicular to headers and the like.

It is a further object of this invention to provide a hanger for mounting hollow metal joists perpendicular to headers and the like whereby the hanger will accommodate any height of joist.

It is still another object of this invention to provide a hanger for mounting hollow metal joists perpendicular to headers and the like wherein one installer can utilize the hanger to obtain exact alignment of the metal joist with respect to the header.

It is also an object of this invention to provide a method for making a hanger and a method for attaching a joist perpendicular to a hanger.

The objects of this invention are accomplished in a hanger for mounting hollow metal joists perpendicular to headers and the like, including a U-shaped top flange

for hanging the hanger, and a backplate suspended from the hanger with the side flanges projecting outward from the backplate for connection to a joist, by the improvement comprising: the side flanges each divided from the backplate outward at a point intermediate to the top and bottom thereof thereby forming a top and bottom portion of the side flanges, and the spacing of the top portions of the side flanges closer together, wherein said side flanges are unconnected except by the backplate thereby enabling them to accommodate any height joist and whereby a joist to be attached to the side flanges is supported by the spaced together top portions of the side flanges while the joist is being attached to the remaining portion of at least one of the side flanges. If desired, an additionally improved, from the standpoint of installation, design includes the one in which the central portion of each side flange is eliminated. Additionally, the design may include that in which the bottom portion of one side flange is eliminated or placed in the same plane as the plane of the backplate since that portion is not needed if a C-shaped joist is being mounted. This is not preferable, however, since this restricts the adaptability of the hanger and even with C-shaped joists limits the joist installation to only one direction.

The objects of this invention are also accomplished by a method for producing a hanger for mounting hollow metal joists perpendicular to headers and the like, said method comprising: forming the top of a backplate into a U-shaped flange for hanging the hanger; dividing the sides of the remaining portion of the backplate along lines intermediate to the top and bottom thereof; bending the sides of the backplate outward to form side flanges; and spacing the top portions of the backplate closer together than the bottom portions of the backplate in order that the inner upper portion of a hollow metal joist may rest on the spaced together top portions of the side flanges. As discussed above with relation to the hanger, the method may additionally consist of the removal of a central portion of the side flanges either prior to or after the side flanges are formed by bending outward the backplate. Additionally, the hanger may be used to mount C-shaped metal joists when the method includes either the elimination of the bottom portion of one of the side flanges or else the leaving of the bottom portion of one of the side flanges in the same plane as the plane of the backplate to act as an extension thereof, although both of these alternatives have the problems hereinabove discussed with relation to the hanger.

The objects of this invention are additionally accomplished by a method for attaching a hollow metal joist perpendicular to a header comprising: hanging a hanger over the header; resting a joist on spaced together upper portions of the hanger; and attaching the joist to at least one of two spaced together bottom portions of the hanger, the bottom portions being on the outside of the joist.

The invention herein described has certain distinct advantages over any of the hangers hereinbefore known. The inward spaced top portions of the side flanges provide an insert for engaging the hollow metal joist and keeping the hanger attached thereto while it is being attached to the header. Most importantly, however, the upper portion of the flanges provides a convenient portion of the hanger for the inside upper portion of the joist to rest upon while in perfect alignment with

the header to which it is being attached. An additional advantage of the hanger is that it will accommodate any height of joist since the hanging of the joist is only at the top thereof and the bottom extension of the joist is immaterial to its suspension with relation to the header. A still further distinct advantage of this hanger is the fact that the inner disposed portions of the side flanges provide a support for the joist in addition to the supporting screws or other supporting attachments. This new design for a hanger accordingly represents a significant advancement in the design of hangers used in attaching hollow metal joists perpendicular to headers.

BRIEF DESCRIPTION OF THE DRAWINGS

The attached drawings may be used to further describe, but not to limit, this invention. In the drawings:

FIG. 1 is a perspective view of the hanger of this invention with the hollow metal joist and header in phantom;

FIG. 2 is a perspective view of an embodiment of the hanger of this invention wherein a portion of the side flange has been removed and wherein the top portion of the side flanges is bent inward to more readily accommodate the metal joist;

FIG. 3 is a top view of the hanger of this invention with the metal joist and header in phantom;

FIG. 4 is a front view of the hanger of this invention with the hollow metal joist and header in phantom; and

FIG. 5 is a perspective view of an alternative embodiment of the hanger of this invention used to accommodate a header over a door with the stud and joist in phantom.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1, the numeral 10 is used to illustrate the top flange of the hanger. This top portion is terminated by downward section 11 which gives the U-shape to the hanger. The hanger preferably has side flanges 12 and 13, generally in parallel planes formed by bending outward the backplate 14, although these side flanges may be independently attached instead of being a bent extension of the backplate. Also, the bottom of one of the side flanges may be eliminated or left in the plane of the backplate although this embodiment is not shown because it is of more limited use as hereinbefore discussed. The side flanges are divided, leaving upper portions 15 and 16, respectively, for permitting additional closer together spacing. The upper portions 15 and 16 are then bent inward so that they may be inserted inside the hollow metal joist. For the purpose of illustration, a header 17 is shown in phantom as well as a hollow metal joist 18 being shown in phantom. The joist shown is of the "C" shape although this invention fully contemplates joists of rectangular cross-section.

The inside upper portion of the side flanges provides a convenient support for the inside upper portion of the hollow metal joist to rest upon. This supports the metal joist while it is being attached to the hanger. The hanger may be attached to the header by any well-known method, such as screws 19 being placed through a suitable opening, and the hanger may also be attached to the metal joist by any conventional method, such as screws 19 being attached in a suitable manner such as through holes 20 into the metal joist. Obviously, if a C-shaped joist is used, only one flange is attached to the joist. It must be understood, however,

that any of the well-known and accepted methods of attachment may be used and the attachment need not be limited to the screw-type arrangement.

It is particularly desirable in this invention to remove portions 21 and 22 of the center of flanges 12 and 13 in order to make the hanger more receptive to the hollow metal joist. Likewise, it is highly desirable to bend inward the end portions 23 and 24 of the upper portion of the side flanges in order that they may more readily receive the hollow metal joist.

FIG. 5 shows an alternative embodiment of this invention. In FIG. 5, the hanger 26 is shown with a bent down portion 27 forming a U-shaped hanger. The backplate 28 is bent upward to form side flanges 29 and 30. Portions of the side flanges are severed to form upper portions 31 and 32 to accommodate the inside of metal joist 33, shown in phantom. The U-shaped portion of the hanger sits over a stud 34, also shown in phantom. Appropriate attachments are made through holes 35 and 36 to attach the joist and the stud to the hanger. This particular embodiment of this invention is useful when the joist is to be used for a facing or when the hanger or any portion of the stud or joist cannot extend outward, such as when the hanger is used in attaching a joist to a stud to form the header for a door.

In utilization of the hanger, the hanger may either first be placed on the header and attached thereto with the metal joist then being slipped onto the hanger and supported thereby while it is being attached to the hanger or else the hanger may be inserted in the metal joist and attached thereto and then the hanger hung on the header and attached to it. In either of the installation methods, one person may easily do the entire attachment procedure without assistance from another individual.

Although many different designs and modifications are within the scope of this claimed invention to add versatility to the particular usage, the attached drawings and the description pertaining thereto constitute the preferred embodiments of this invention.

This invention is a remarkable improvement in hangers for use in mounting hollow metal joists perpendicular to headers and the like. The hanger provides an exceptional savings in utilization of manpower as well as providing an adaptable hanger for use with any height metal joist. This invention also provides a hanger that can provide exact alignment of the joist with the header in all installations. In addition, this invention provides a hanger having increased supporting ability and not relying entirely upon screws or the like to overcome the shear created by weight on the joist.

Having fully described this new and novel invention the following is claimed:

1. In a hanger for mounting hollow metal joists perpendicular to headers and the like, including a U-shaped top flange for hanging the hanger, and a backplate suspended from the hanger with side flanges projecting outward from the backplate for connection to a joist, the improvement comprising: the side flanges each divided from the backplate outward at a point intermediate to the top and bottom thereof thereby forming a spaced top and bottom portions of the side flanges, and with the distance between the top portions of the side flanges being less than the distance between the bottom portions of the side flanges, wherein said side flanges are unconnected except by the backplate to define a channel open at both ends thereby enabling

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them to accommodate any height joist, and whereby a joist to be attached to the side flanges is supported by the spaced together top portions of the side flanges while the joist is being attached to the remaining por-

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tion of at least one of the side flanges.

2. The improvement as in claim 1 wherein a central portion of each side flange is eliminated.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3,907,445

DATED : Sept. 23, 1975

INVENTOR(S) : Alan C. Wendt

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

Claim 1, Column 4, Line 62 "a" should be deleted.

Signed and Sealed this

tenth Day of February 1976

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

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