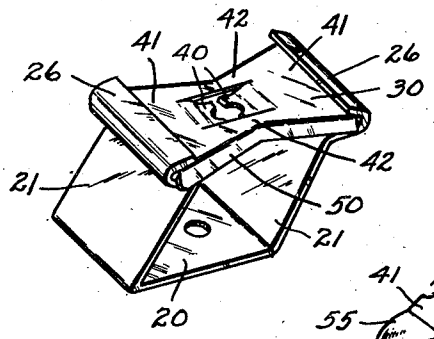
Dec. 12, 1944. R. A. HARTMAN 2,364,846

FASTENING DEVICE

Filed Dec. 22, 1943

FIG. 1



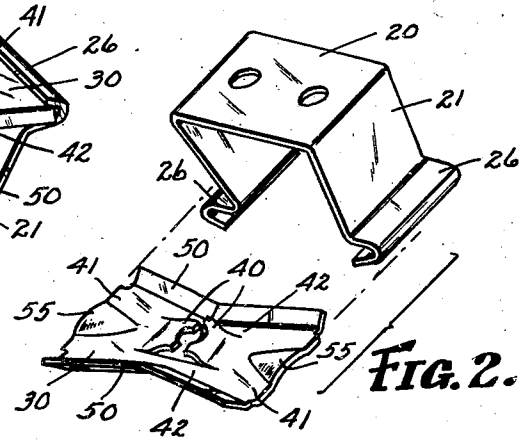
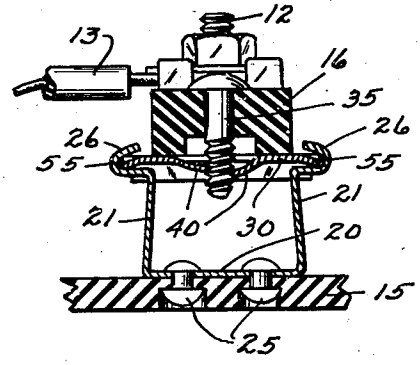


FIG. 2.

FIG. 3



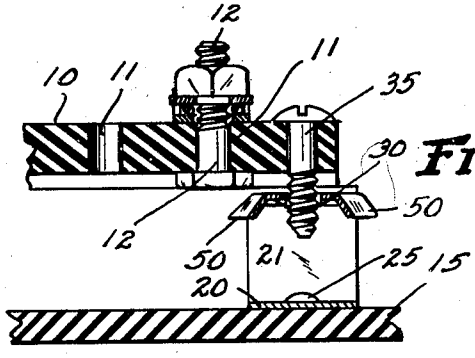


FIG. 4

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FASTENING DEVICE

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8 Claims. (Cl. 248—49)

This invention relates to fasteners and particularly to those which are made of sheet metal and which are adapted for use in holding two or more articles together. This invention is particularly useful in connection with an anchorage for an electrical terminal strip, although it is not limited to such utility.

One of the difficulties in anchoring electrical terminal strips to an insulating base has been the desirability of locating a number of binding posts in close proximity to each other and at the same time adequately securing the strip to a support in spaced relation thereto, so that access might be had to the underside of the terminal strip for making the electrical connections thereto. Usually the binding posts have the head of a bolt on the underside thereof, and have the threaded portion on the upper side where the conductor may be conveniently attached thereto. It is desirable to use a sheet metal fastener for positioning the retainer strip on the support, but the size normally required to achieve adequate mechanical strength has been a detrimental factor in utilizing a sheet metal fastener in such assembly.

An object of the present invention, therefore, is to so construct the sheet metal fastener that it may be readily used in the aforesaid assembly without incurring the enumerated difficulties. An additional object is to provide a sheet metal fastener assembly that will facilitate attachment of the terminal block without interfering with the electrical connections made thereto.

Referring now to the drawing, Fig. 1 is a perspective view of a sheet metal fastener assembly embodying the present invention; Fig. 2 is an exploded perspective view of the parts shown in Fig. 1; Fig. 3 is a vertical section taken transversely through a terminal strip that is assembled in accordance with the present invention, and Fig. 4 is a vertical section taken longitudinally through the strip illustrated in Fig. 3.

The present invention is illustrated in connection with an electrical terminal strip 10 which has apertures 11 at spaced intervals thereon for receiving bolts 12 that are adapted for making an electrical connection to flexible conductors 13, only one of which is shown in the drawing. The terminal connections are preferably made on the upper side of the strip and in such manner that the heads of the bolts are disposed on the undersides thereof as shown in Fig. 4.

To support the terminal strip above an insulating base 15, and at the same time to permit the terminal connections to be spaced closely together, I utilize a clip which embodies a strip of sheet metal bent to provide an intermediate portion 20, and arm portions 21 which extend in the same general direction from the intermediate portion. The clip may be fastened securely to the base in any convenient manner, such as by rivets 25.

The free end portion of each arm is bent outwardly and then inwardly, as at 26, to provide guideways for receiving the ends of the sheet metal fastener indicated in general at 30. Preferably the clip is so formed that the arms must be sprung apart to receive the ends of the fastener 30, whereby the resiliency of the arms operate to hold the fastener in self-sustaining bolt-receiving position thereon. A bolt 35 is shown for attaching the strip to the fastener.

The fastener 30 embodies a sheet metal strip having thread-engaging portions carried thereby and preferably in the form of tongues 40 which are formed from the strip, and which are tilted with respect to each other at their end portions to conform to the helix of a thread on the bolt with which they are intended to be used. The tongues are attached to the body in regions spaced from the ends thereof, whereby the body has end portions 41 and side portions 42. In the form illustrated, the body is narrower at its mid-portion than at the end portions and additionally, the body has wing portions 50 extending along the marginal edges thereof so as to impart rigidity to it and to provide a clearance for the head of an adjacent bolt 12.

As an additional means for rigidly holding the fastener in position on the clip, the end portions are arched transversely, as at 55, to act as cam surfaces which necessitate a slight spreading of the clip portions 26 to admit the fastener thereto.

A fastening device made in accordance with the present invention permits the use of a sheet metal structure for holding the terminal strip in spaced relationship to an insulating support and at the same time allows the terminal connections to be made in relatively close alignment on the strip.

I claim:

1. A fastener having a body embodying a sheet metal strip having an aperture therein for receiving the shank of a bolt or the like, said body being narrower at the mid-portion than at the end portions thereof, and a supporting clip having a base and a pair of comparatively stiff upstanding arms which engage the ends of the fastener and support it.

2. A fastener comprising a body of sheet metal having an aperture therein for receiving the

shank of a threaded bolt or the like and carrying thread engaging means thereon adjacent the aperture for engaging said bolt or the like to make a binding interengaging connection therewith, said body having portions thereof forming flanges along opposite marginal edges thereof, and said body being gradually reduced in width from the end portions thereof to the mid-portion thereof.

3. A fastening device comprising a sheet metal strip having an aperture therein adapted to receive the shank of a bolt or the like and having thread-engaging means formed integrally therewith for engaging a thread on said bolt or the like, and having the mid-portion thereof narrower than the end portions, each of said end portions having a part deformed out of the general plane of the strip to provide a cam surface thereon which is adapted to engage a retaining part and to be frictionally held thereby.

4. Means for joining a part to another part and holding it in spaced relationship thereto, said means including a clip adapted to be attached to one of said parts and having a pair of arms extending in the same general direction toward the other part, a fastener carried by said arms and having an aperture therein and a deformed portion about the aperture to bindingly engage a bolt or the like that is adapted to extend through said part, the ends of said arms being bent inwardly across the end portions of the fastener.

5. Means for interconnecting a support and an article and for holding the article in spaced relationship to the support, said means comprising a base and two projecting arms, said arms extending in the same general direction toward said article and having the end portions thereof bent outwardly and then inwardly to provide guideways, and a sheet metal strip having the ends thereof disposed in said guideways and having an aperture therethrough and thread-engaging means carried by said strip adjacent said aperture.

6. Means for interconnecting a support and an article and for holding the article in spaced relationship to the support, said means comprising a strip of sheet metal bent intermediately to provide two arms and a connecting portion, said arms extending in the same general direction toward said article and having the end portions thereof bent outwardly and then inwardly to provide guideways, and a sheet metal strip having the ends thereof disposed in said guideways and having an aperture therethrough, said strip being deformed about the aperture to provide a stud-engager.

7. Means for inter-connecting a support and an article and for holding the article in spaced relationship to the support, said means comprising a strip of sheet metal bent intermediately to provide two arms and a connecting portion, said arms extending in the same general direction toward said article and having the end portions thereof bent outwardly and then inwardly to provide guideways, and a sheet metal strip having the ends thereof disposed in said guideways and having an aperture at the mid-portion thereof, and said fastener having thread-engaging means thereon carried thereby for engaging the shank of a bolt or the like which extends through said aperture, and said fastener having marginal portions on opposite sides thereof extending away from said part and having the mid-portion thereof narrower than the end portions thereof.

8. As a new article of manufacture, a fastener comprising an integral piece of resilient material of a shape substantially composed of two trapezoids joined at the shorter of their parallel edges, the margins of the reentrant portions of the strip having stiffening flanges, an aperture located substantially at the waist of the strip, the body of the strip adjacent the aperture being deformed to provide engaging and retaining means for the stud which may pass through the aperture.

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