

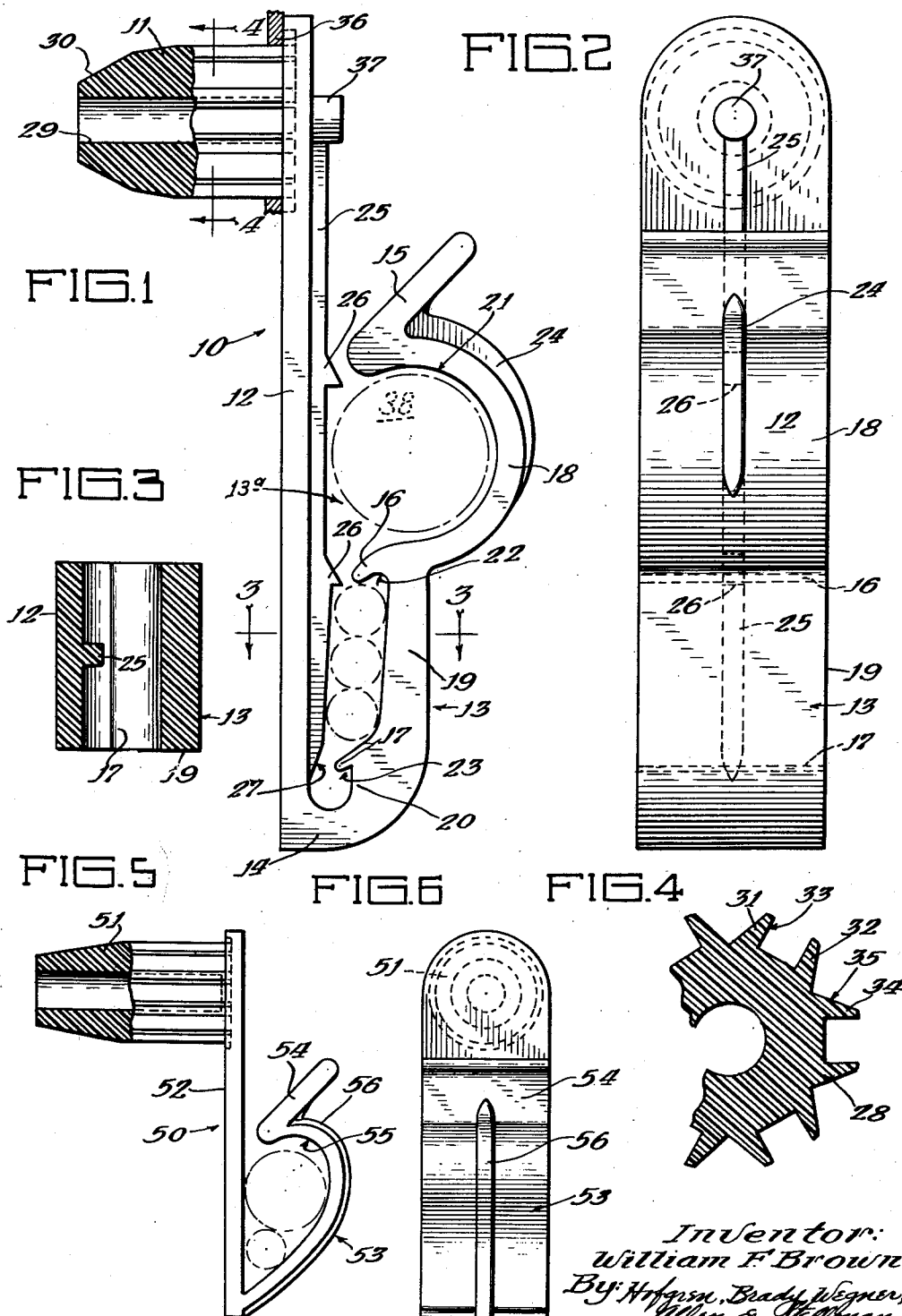
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RETAINER FOR WIRES

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RETAINER FOR WIRES

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This invention relates to a one-piece strap retainer of resilient molded plastic for supporting and retaining wires and the like relative to an apertured base.

Modern commercial automobiles and trucks contain many wires within their frames, especially in the engine compartments. For proper and safe operation, these wires must be securely mounted. The present invention provides a one-piece retainer with which wires or cables can easily and quickly be slipped into position substantially reducing installation costs.

Formerly, several operations were necessary to effect automotive wiring assembling. This obviously increased the installation costs and reduced the efficiency of the installation operation. The present invention provides a one-piece retainer having an integral jaw which defines various sized spaces for the retention of wires and the like. The wires are positioned in one simple step, and furthermore, various sized wires are held in spaced relation without rubbing or scraping on other wires.

It is a general object of this invention to provide a new and improved retainer for supporting and retaining wires and the like relative to a base.

Another object is to provide such a retainer whereby a jaw defines a space from the strap for retention of the wires.

Another object of this invention is to provide such a retainer having an overhanging lip for retaining the wires against accidental removal.

A still further object is to provide such a retainer which uses the resilience of the plastic as the sole means of urging the jaw toward the strap.

Other objects, features and advantages of the present invention will be apparent from the following description of a preferred embodiment illustrated in the accompanying drawings, in which:

FIGURE 1 is a side elevational view of a retainer embodying the invention with a portion of the post in section and wires shown in broken lines;

FIGURE 2 is an elevational view looking from the right in FIGURE 1;

FIGURE 3 is a sectional view taken substantially along the line 3—3 of FIGURE 1;

FIGURE 4 is a broken sectional view taken substantially along the line 4—4 of FIGURE 1;

FIGURE 5 is a side elevational view of a modified embodiment of the retainer; and

FIGURE 6 is an elevational view looking from the right in FIGURE 5.

The retainer, generally designated 10, is preferably a one-piece molded resilient plastic member having three principal portions, a mounting post 11, a strap 12 and a jaw 13. The elongated strap 12 extends laterally from one end of the post 11 and the opposed wire retaining jaw 13 is integral therewith at a point remote from the post 11. The jaw portion 13 defines a wire retaining space 13a with the strap. The jaw 13 has a position along the strap as illustrated and is manually movable away from the strap, to facilitate mounting wires between the jaw and strap. The resilience of the plastic urges the jaw toward the strap and leaves a small opening 13a between the strap and the jaw when the jaw is not flexed away from the strap.

An outer wedging portion 15 on jaw 13 extends at an angle to the strap 12 and forms with the strap a narrowing opening to the space between the strap and jaw al-

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lowing a wire to force the jaw away from the strap to admit a wire. Inner wedging portions 16 and 17 on the jaw 13 also form with the strap 12 narrowing openings to the space between the strap and jaw, movement of a wire against the inner wedging portions forcing the jaw away from the strap to admit a wire. Thus, the outer wedging portion 15 and the inner wedging portions 16 and 17 divide the jaw 13 into a large retaining portion 18, a medium retaining portion 19, and a small retaining portion 20 for retaining wires.

Overhanging lip 21 on the large retaining portion 18 of the jaw 13 retains wires therebetween against removal upon motion of the wire toward the opening into the space between the strap and the jaw. Likewise, overhanging lips 22 and 23 on the medium and small retaining portions, respectively, or the jaw 13 retain wires against accidental removal. Thus, a small wire must pass between the three wedging portions 15, 16 and 17 and strap 12 in order to fit into the small retaining portion 20 of the jaw 13. As shown in FIGURE 1, the retainer device of this invention can support at least three different sizes of wire, each in a separate portion of the jaw.

Stiffener rib 24 on the large retaining portion 18 of the jaw reinforces the structure. The integral connection at point 14 between the strap and the jaw urges the jaw toward the strap and forms a small opening between the strap and the jaw when the jaw is not flexed away from the strap. The strap and jaw maintain their respective positions even after long periods of extensive use. In fact, the jaw literally snaps back into position alongside the strap after the flexing pressure is removed. Because of the overhanging lips 21, 22 and 23 on the jaw, considerably more force is needed to remove a wire from the retaining device than to insert a wire into the jaw.

The elongated strap 12 has a central reinforcing strengthening rib 25 (FIG. 3) and overhanging barriers 26 which protect against accidental removal of wires 38, shown in FIGURE 1 in dotted outline. The inclined end 27 of the reinforcing strengthening rib 25 aids in the insertion of a wire into the small retaining portion 20 of the jaw.

After the retainers are placed in position in a frame or bulkhead of an automobile, they are sometimes required to withstand the heat necessary to cure the paint on the sheet metal parts of the vehicle. The material from which the reainer is molded should therefore have a high heat resistance. Under these circumstances, it has been preferable to form the retainer from the plastics of the nature of nylon. This material is particularly useful in the structure of the post and reinforcing rib of the strap since it is semi-rigid and gives the post a high strength, permitting it to retain itself in an apertured base against a considerable force seeking to remove it.

The construction of the post 11 is best seen in FIGURES 1 and 4. The body 28 of the post is either solid or contains a bore 29 and is tapered at its end at 30. The longitudinal extent of the post is provided with alternate fillets and grooves. Referring to FIGURE 4, a pair of fillets 31 and 32 have a relatively square groove 33 therebetween while adjacent fillets 32 and 34 have an obtuse angled groove 35 therebetween. This particular fillet and groove configuration has proved very successful in giving the post considerable holding power when forced into an apertured metal plate such as 36 which is smaller than the inscribed figure about the fillets. Stub section 37 aids in the insertion of the post into the aperture by providing a pressure applying section. The fillets do not shear in the use, but bend because of their particular shape. Ordinarily, the fillets are formed so that a circle may inscribe them and a circular or a near circular aperture of slightly smaller size may be used to receive the post.

FIGURES 5 and 6 show a modified embodiment of the

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retaining device of this invention. The main difference between the device shown in FIGURE 5 and the device shown in FIGURE 1 is that the device in FIGURE 5 has only one space for supporting wires whereas the device in FIGURE 1 has three such supporting spaces. The device 50 shown in FIGURE 5 has a post 51, a strap 52 and a jaw 53 all integrally connected. The jaw has an outer wedging portion 54, an overhanging lip 55 and a stiff inner rib 56 extending substantially the entire length of the jaw 53. The jaw 53 is at such an angle as to securely hold the smaller wires beneath the larger wires. This device is operable in exactly the same manner as the device shown in FIGURE 1, but as mentioned above, has fewer retaining spaces.

The mere insertion of a strap retainer of this invention into an aperture in the frame of a car provides a device which supports, positions and retains electrical wiring, control cables and the like. A single wire or a plurality of wires may be controlled easily and safely by this strap retainer. The strap retainer maintains its position even under severe jarring and extreme heat. In this invention the resilience of the plastic urges the jaw toward the strap and thereby retains the wires in position.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

I claim:

1. A one-piece strap retainer of resilient molded plastic for supporting and retaining wires and the like relative to an apertured base, comprising: a tapered solid post having means for securing the same within a sheet metal aperture; an elongated strap having a reinforcing rib centrally thereon and extending laterally from one end of the post; an opposed wire retaining jaw integral with the strap at point remote from said post, the resilience of the plastic urging the jaw towards the strap, there being a space between the jaw and strap; an overhanging barrier on said strap protecting against accidental removal of said wire from said jaw; a stiffener rib on said jaw; an outer wedging portion on the jaw at an angle to the strap forming with the strap a narrowing opening to the space between the strap and jaw and overhanging lips on the jaw between said strap and jaw cooperating with the strap for retaining wires therebetween against removal upon motion of the wire toward the opening into said space.

2. A one-piece strap retainer of molded resilient plastic for supporting and retaining wires and the like relative to an apertured base, comprising: a tapered solid post having means for securing the same within a sheet metal aperture; an elongated strap extending laterally from one end of the post; an opposed wire retaining jaw integral with the strap at a point remote from said post, the re-

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silience of the plastic urging the jaw toward the strap, there being a space between the jaw and strap; a reinforcing rib centrally on said strap; overhanging barriers on said strap protecting against accidental removal of said wire from said jaw; a plurality of retaining portions on said jaw spaced different distances from said strap for retaining wires; an outer wedging portion on the jaw at an angle to the strap forming with the strap a narrowing opening to the space between the strap and the jaw; and overhanging lips intermediate said retaining portions on the jaw between said strap and said jaw for retaining wires therebetween against removal upon motion of the wire toward the opening into said space.

3. A one-piece strap retainer of resilient molded plastic for supporting and retaining wires and the like relative to an apertured base, comprising: a tapered post having means for securing the same within a sheet metal aperture; an elongated strap extending laterally from one end of the post; an opposed wire retaining jaw integral with the strap at a point remote from said post, the resilience of the plastic urging the jaw toward the strap, there being a space between the jaw and strap; a stiffener rib on said jaw; an outer wedging portion on the jaw at an angle to the strap forming with the strap a narrowing opening to the space between the strap and jaw and at least one overhanging lip on the jaw between said strap and jaw cooperating with the strap for retaining wires therebetween against removal upon motion of the wire toward the opening into said space.

4. A one-piece strap retainer of resilient molded plastic for supporting and retaining wires and the like relative to an apertured base, comprising: a tapered post having means for securing the same within a sheet metal aperture; an elongated strap having a reinforcing rib centrally thereon and extending laterally from one end of the post; an opposed wire retaining jaw integral with the strap at a point remote from said post, the resilience of the plastic urging the jaw towards the strap, there being a space between the jaw and strap, an overhanging barrier on said strap protecting against accidental removal of said wire from said jaw; a stiffener rib on said jaw; an outer wedging portion on the jaw at an angle to the strap forming with the strap a narrowing opening to the space between the strap and jaw and at least one overhanging lip on the jaw between said strap and jaw cooperating with the strap for retaining wires therebetween against removal upon motion of the wire toward the opening into said space.

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