Sept. 2, 1947. A. ROBERTSON ET AL 2,426,708

ADJUSTABLE WIRE OR CONDUIT CLIP

Filed June 12, 1944

FIG. 1.

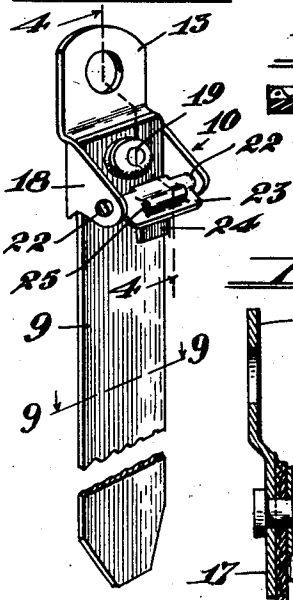


FIG. 9.



FIG. 2.

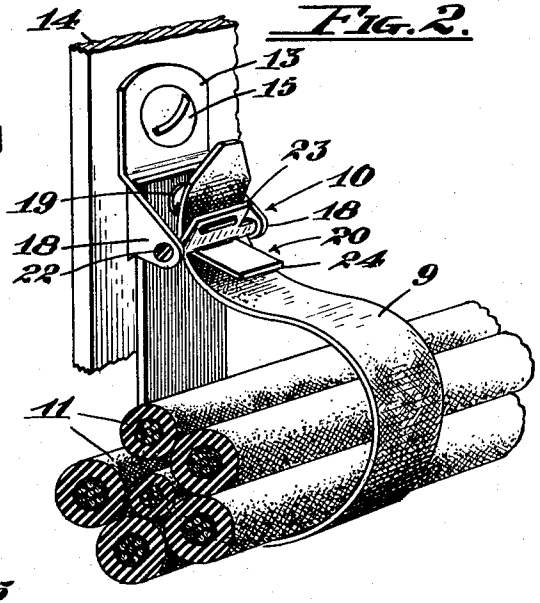


FIG. 4.

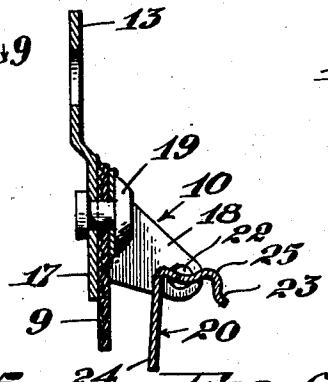


FIG. 3.

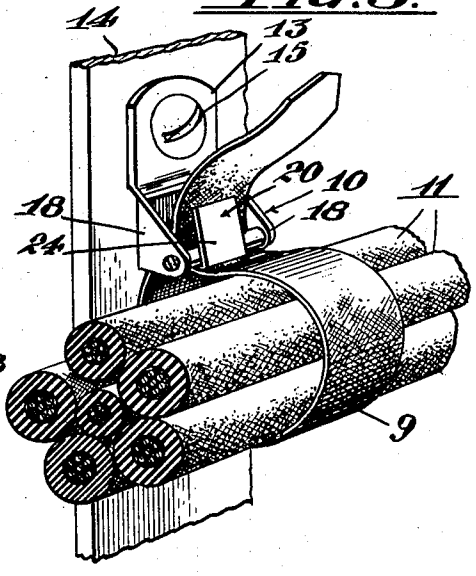


FIG. 5.

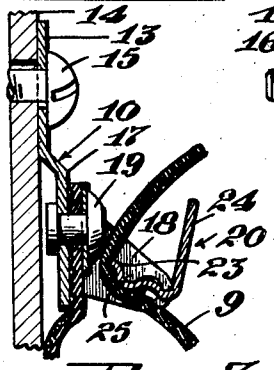


FIG. 6.

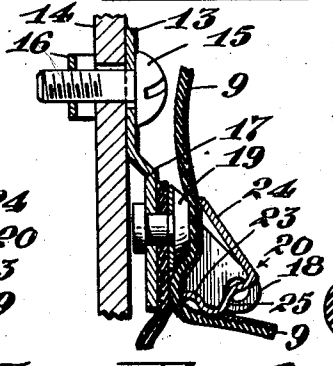


FIG. 7.

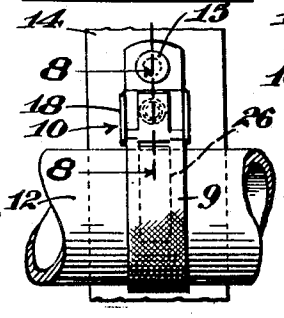
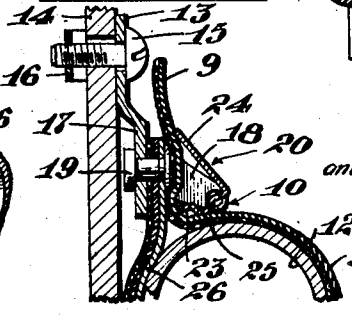


FIG. 8.



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ADJUSTABLE WIRE OR CONDUIT CLIP

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Application June 12, 1944, Serial No. 539,913

8 Claims. (Cl. 248—74)

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The present invention relates to clips for supporting wires or conduits in aircraft, surface craft and the like as exemplified in United States Letters Patent Number 2,345,279 issued March 28, 1944, to E. M. Morehouse, wherein a flexible strap is adapted to be looped around a bundle of wires or a conduit and by means of an associated clamping means or buckle is clamped around the wires or conduit and fastened to a support.

An object of the present invention is to provide a flexible and adjustable clip of the character described which embodies improvements and advantages over similar clips in point of its simplicity of construction, reduction of the number of parts, ease and readiness of installation, adaptability to clamping wire bundles or conduits of varying diameters over a wide range, low weight and low cost of production and reliability of performance.

Another object of our invention is to provide a clip such as described in which the parts are constructed and arranged whereby after the clip is finally clamped on the wires or a conduit it may be readily and easily bolted or otherwise fastened to a support and as readily removed while tightly clamped around the wires or conduit, or may be fastened to the support first and then clamped around the wires or conduit, all to the end that such alternate methods of installation make it possible to readily install the clip in the best possible manner in consideration of the space available and the particular construction of the supporting part and other conditions at hand.

Another object of our invention is to provide a clip such as described in which a single pivoted jaw member on a simple form of buckle or clamp body attached to the flexible loop forming strap of the clip is constructed and arranged to serve the triple function of effectively clamping the strap in the desired loop size around the wires or conduit, preventing metal portions of the buckler from rubbing against and damaging the wires or conduit, and quickly releasing the strap incident to pulling on the free end of the strap in a particular manner.

With the foregoing objects in view together with such other objects and advantages as may subsequently appear, the invention resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed, and illustrated by way of example in the accompanying drawing in which:

Fig. 1 is a fragmentary perspective view of a clip embodying our invention:

Fig. 2 is a perspective view of the clip as it would appear when installed on a support and before the strap is tightened as a supporting loop for a bundle of wires:

Fig. 3 is a perspective view of the clip as when completely installed to support a group of wires:

Fig. 4 is a fragmentary enlarged vertical sectional view taken on the line 4—4 of Fig. 1:

Fig. 5 is an enlarged vertical sectional view showing how the clip when installed is manipulated to clamp the strap:

Fig. 6 is a sectional view corresponding to Fig. 5 showing the clamp a buckle as when the installation is completed with the strap tightly held as a clamping and supporting loop:

Fig. 7 is a front elevation of the clip as installed for supporting a conduit:

Fig. 8 is a vertical sectional view taken on the line 8—8 of Fig. 7:

Fig. 9 is a horizontal sectional view taken on the line 9—9 of Fig. 1.

Referring to the drawing more specifically it will be seen that one embodiment of our improved clip includes a flexible strap 9 to one end of which a fastening means in the form of a buckle 10 is secured whereby the strap may be looped around a bundle of wires 11 as shown in Figs. 2 and 3 or around a conduit 12 as shown in Figs. 7 and 8, and tightly clamped on the buckle. An attaching ear 13 is carried by the buckle so that when the latter is in clamped as well as unclamped position, the clip may be readily secured to a support 14 as by means of a bolt 15 and nut 16, and can be as easily removed from the support when the buckle is in clamped or unclamped position.

The improved clamp or buckle 10 of our invention comprises a plate-like body portion 17 having opposed apertured ears 18 extended outwardly from opposite side edges thereof and provided with the attaching ear 13 in the form of an offset extension from the upper edge of the body portion. The offset ear 13 disposes the body portion 17 in outwardly spaced relation to the support 14 when the clip is secured to a support as shown in Fig. 6. Said ear 13 and body portion 17 are formed as flat plates which occupy parallel planes.

An end of the strap 9 is secured to the body portion 17 between the ears 18 by means of a rivet 19 or like fastening and the other end of the strap is adapted to be passed upwardly between said ears and between the body portion and a substantially L-shaped lever-like clamping jaw 20 pivotally supported on said ears. The jaw 20 on one leg thereof is provided adjacent the

juncture of the legs with integral extensions 22 extending through the apertures in the ears 18 as pintles for pivoting the jaw thereto. The free transverse edge of the leg 23 of the jaw 20 is adapted to engage the strap and force it against the portion of the strap lying upon the body portion 17 just below the rivet 19, to tightly clamp the strap as shown in Fig. 6, the other leg 24 then being upwardly and inwardly inclined toward the upper part of the body portion and lying in an out-of-the-way position against the free end portion of the strap which is then extended upwardly beyond the buckle. Upon pulling the free end of the strap downwardly and outwardly it will pull against the leg 24 and swing it downwardly thereby moving the leg 23 out of clamping position thereby quickly and easily releasing the strap.

A means is embodied in the jaw or lever 20 for contacting the loop formed by the strap so as to space the wires or conduit in the loop from contact with the metal parts of the buckle to prevent wear and damage of the wires or conduit. As here provided this means comprises a protuberance or projecting dimple 25 formed on the leg 23 by bending it at a point intermediate the ends and the side edges of the leg as shown in Figs. 1, 5, 6 and 8, which dimple will push downwardly on the loop and thus space the buckle from contact with the wires or conduit in the loop. This contact of the dimple 25 with the loop to one side of the point where the loop is closed and clamped as shown in Figs. 6 and 8 causes the loaded loop to be held against the support so as to prevent bouncing thereof responsive to the constant vibration to which the wires or conduits are subjected. The dimple-forming bend in the leg 23 gives it a sinuous outline and makes it slightly resilient in relation to its length thus causing it to exert a more efficient endwise pressure against the gripped strap.

It is now seen that the strap may be first looped around the wires or a conduit as in a sub-assembly operation, then fastened to the support, it being possible to readily insert and manipulate the bolt 15 after the jaw 20 is in clamping position due to the compact arrangement of the buckle or clamp. If desired the ear 13 may be fastened to the support and the strap then looped around the wires or conduit, pulled tight and clamped. In either case the operation of the buckle or clamp may be readily and easily effected by hand to clamp or release the strap and the buckle in being small and compact takes up but little space and has no part projecting outwardly from the assembly to catch on clothing or otherwise constitute an objectionable projection.

The flexible strap may as here shown be formed of a suitable strong fabric coated on one side with rubber or the like as shown more particularly in Fig. 9, whereby a cushioning action is afforded to protect the wires or conduits from undue wear. The rubber or like material may be vulcanized or bonded to the fabric or otherwise combined therewith. However, any flexible material having adequate strength whether combined with a rubber or like lining or not may be used advantageously in accordance with our invention.

If desired the clip may be provided with an electrically inductive bonding strip 26 held in place as shown in Fig. 8 by means of the rivet 19 so as to lie between the conduit and the strap whereby fugitive electrical currents developed in the conduit line will be discharged noiselessly and harmlessly through the strip, the rivet, body 17 and ear 13 into the metal support on which the clip is mounted.

While we have shown and described a specific embodiment of our invention we do not limit ourselves to the exact details of construction set forth, and the invention embraces such changes, modifications and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

We claim:

1. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, a jaw pivoted on said body portion for movement into and out of a position for contacting the strap and clamping and holding portions thereof together and against the body portion to maintain the strap as a supporting loop tightly embracing the wires or conduit therein, and an apertured ear carried by said body portion and adapted to be secured to a support, said body and ear consisting of flat plate portions in parallel planes with the ear rearwardly offset from the body thus providing a clearance behind the body of the mounted clip for a part of a strap fastener.

2. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, a jaw pivoted on said body portion for movement into and out of a position for contacting the strap and clamping and holding portions thereof together and against the body portion to maintain the strap as a supporting loop tightly embracing the wires or conduit therein, and an apertured ear carried by said body portion and adapted to be secured to a support, said jaw being disposed in entirety between the aperture in said ear and the looped portion of the strap when in clamping position whereby ready access may be had to the aperture for insertion and manipulation of a fastening to secure the clip to the support, said body and ear consisting of flat plate portions in parallel planes with the ear rearwardly offset from the body thus providing a clearance behind the body of the mounted clip for a part of a strap fastener.

3. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, a pair of ears projecting outwardly from said body portion and between which is extended the portion of the strap which is secured to the body portion, a substantially L-shaped jaw pivoted between its ends on said ears so that one leg thereof will contact a portion of the strap and force it against another portion of the strap to clamp and hold the strap in the form of a loop depending from said body portion when the jaw is moved into a predetermined position in which the other leg extends upwardly and inwardly toward the body portion, and an apertured member carried by the body portion and adapted to be secured to a support, said other leg having its free end disposed between the aperture in said member and the jaw pivot when the jaw is in clamping position, thereby at such time leaving said aperture unobstructed.

4. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, a pair of ears projecting outwardly from said body portion and between which is extended the portion of the strap which is secured to the body portion, a substantially L-shaped jaw pivoted between its ends on said ears so that one leg thereof will contact a portion of the strap and force it against another portion of the strap to clamp and hold the strap in the form of a loop depending from said body portion when the jaw is moved

into a predetermined position in which the other leg extends upwardly and inwardly toward the body portion, and an apertured member carried by the body portion and adapted to be secured to a support, and a projection on said jaw between the portion thereof which contacts the strap and the point of pivotal connection of the jaw with said ears, for engaging the looped portion of the strap to one side of the clamped together portion of the strap to hold the loop portion in a predetermined position.

5. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, an L-shaped jaw pivoted adjacent its angle on said body portion for movement into and out of a position wherein the free end of one of its limbs contacts the strap to clamp and hold portions thereof together and against said clamp body portion to maintain the strap as a supporting loop tightly embracing the wires or conduits therein, the strap-clamping limb being bent to a sinuous shape to impart to it endwise resiliency, and the other limb having its free end portion positioned to engage the loop portion of the strap at a point at one side of said clamped together portions of the strap to hold the loop in a predetermined position.

6. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap and securable to a support, a pair of ears projecting outwardly from said body portion and between which is extended the portion of the strap which is secured to the body portion, and a substantially L-shaped jaw pivoted between its ends on said ears so that one leg thereof will contact a portion of the strap and force it against another portion of the strap to clamp and hold the strap in the form of a loop depending from said body portion when the jaw is moved into a predetermined position in which the other leg extends upwardly and inwardly toward the body portion, said one leg having in it a bend which imparts longitudinal resiliency to it and thereby causes it to exert a more efficient endwise pressure against the gripped strap.

7. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, a pair of ears projecting outwardly from said body portion and between which is extended the portion of the strap which is secured to the body portion, a substantially L-shaped jaw pivoted between its ends on said ears so that one leg thereof will contact a portion of the strap and force it against another portion of the strap to clamp and hold the strap in the form of a loop depending from said body portion when the jaw is moved into a predetermined position in which the other leg extends upwardly and inwardly toward the body portion, and an apertured member carried by the body portion and adapted to be secured to a support when the jaw is in clamped position as well as when in unclamped position, said one leg having in it a bend which imparts longitudinal resiliency to it and thereby causes it to exert a more efficient endwise pressure against the gripped strap.

8. In a clip for wires or conduits, a clamp body portion attachable to one end of a flexible strap, a pair of ears projecting outwardly from said body portion and between which is extended the portion of the strap which is secured to the body portion, a substantially L-shaped jaw pivoted between its ends on said ears so that one leg thereof will contact a portion of the strap and force it against another portion of the strap to clamp and hold the strap in the form of a loop depending from said body portion when the jaw is moved into a predetermined position in which the other leg extends upwardly and inwardly toward the body portion, and an apertured member carried by the body portion and adapted to be secured to a support, and a projection on said jaw for engaging the looped portion of the strap at a point to one side of the clamped together portions of the strap whereby the looped portion is held in a predetermined position against the support and relative to said ears and body portion, said projection resulting from an arcuate bend in said strap-engaging jaw spaced away from the end thereof, said bend causing the jaw to engage the gripped strap with a more efficient pressure.

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DALE W. MERRITT.

REFERENCES CITED

The following references are of record in the file of this patent:

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