March 8, 1966 OSAMU ARAI 3,238,580

DEVICES FOR BINDING CONDUCTORS

Filed July 8, 1963

Fig. 1

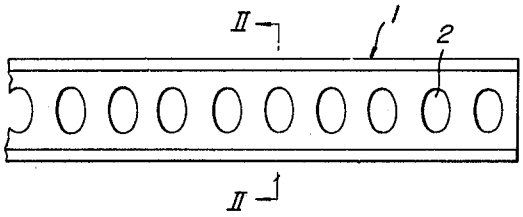


Fig. 2

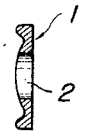


Fig. 3

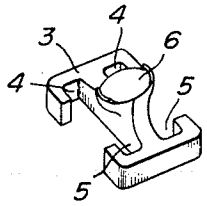


Fig. 4

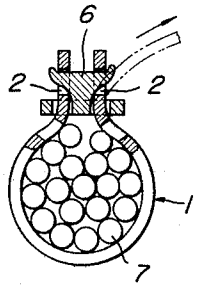
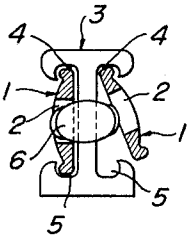


Fig. 5



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DEVICES FOR BINDING CONDUCTORS

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This invention relates to devices for binding conductors for wiring use and particularly to those used in arranging conductors in order as on the back of switchboards.

In arranging conductors on the back of switchboards, it has been customary to bind conductors with hemp cords or vinyl tapes or with bands having a buckle of specialized form.

Any of the previous binding procedures has involved a substantial amount of labor and has made it troublesome or difficult to unbind the conductors for their rearrangement.

The present invention has for its object to provide a device for binding conductors which is simple in structure and operation, effective, and readily releasable to unbind the conductors as when required for their rearrangement.

The present invention will now be described in detail with reference to the accompanying drawing, which illustrates one preferred embodiment of the invention and in which:

FIG. 1 is a plan view of the binding strap used in the embodiment;

FIG. 2 is a cross-sectional view taken along the line II—II in FIG. 1;

FIG. 3 is a perspective view of the I-shaped buckle;

FIG. 4 is a cross-sectional view of the device in use; and

FIG. 5 is a plan view illustrating the manner in which the binding strap is inserted in the buckle.

Referring to the drawing, the device illustrated is basically comprised of a binding strap **1** formed along the medial line thereof with a row of longitudinally spaced apart through apertures or slots **2** and a generally I-shaped buckle **3** incuding a media web portion and top and bottom flange portions formed integral with said web portion at its opposite ends and recessed as at **4** and **5** to receive the opposite edge portions of the binding strap **1** on the respective sides of the web portion. The web portion has a button-like formation **6** projecting therefrom substantially at right angles to the general plane of the buckle **3** and having a laterally enlarged head to engage the opposite end portions of the strap **1**.

The binding strap **1** is preferably formed of a tough and resilient synthetic resin material such as nylon, and the buckle **3** is preferably formed of a relatively hard and readily moldable synthetic resin such as polystyrol.

The strap **1** is formed on one side with beads extending along the opposite longitudinal edges thereof and is preferably bulged at least on that side between the beaded edges as clearly shown in FIG. 2 for purposes of strengthening the strap and of further ensuring the engagement of the enlarged head portion of the button-like formation **6** on the buckle with the slots **2** in the strap.

In use of the present device for binding conductors, at the first one end portion of the binding strap **1** is passed through one side of the buckle **3** with the beaded edges of the strap received in the opposing recesses **4** and **5** so that one of the slots **2** in the strap end is engaged by the enlarged head of the button-like formation **6** formed on the buckle. Then, the other end portion of the strap **1** is passed through the another side of the buckle with the bead edges received in the opposing recesses **4** and **5** to bind together conductors **7** (FIG. 4). This end of the

strap **1** is then firmly drawn in the direction indicated by the arrow in FIG. 4 to bind together the conductors fully tightly. When the strap **1** is subsequently released, it assumes a position as indicated in solid lines under its own resiliency so that another slot **2** in the strap is firmly engaged by the button-like formation **6** formed on the buckle **3** to prevent any unintentional loosening of the binding strap. At this point, any excessive length of the strap **1** may be severed off to complete the binding procedure. When it is desired to release the device for rearrangement of the conductors, it is only required to bend one end of the strap **1**, for example as illustrated by the dotted lines in FIG. 4, to disengage the slot **2** from the button **6**. After this, the operator can pull out the strap end portion downwardly through the opposing recesses **4** and **5** without effort to release the conductors.

As described hereinbefore, the recesses **4** and **5** are formed only in the top and bottom flange portions of the buckle. This is advantageous from the standpoint of the operation efficiency in that the major portion of the elongate binding strap may be passed aslant through the buckle as illustrated in FIG. 5 and then fitted in the recesses **4** and **5** at an appropriate later time.

Having described and shown one preferred embodiment of the invention, it is to be understood that it is not to be restricted to the details set forth, but many changes and modifications may be made without departing from the spirit and scope of the invention as claimed.

What is claimed is:

1. A device for binding conductors comprising a combination of a binding strap formed on one side with beads extending along the opposite longitudinal edges thereof and having a row of spaced apart slots formed along the medial line of the strap and a generally I-shaped buckle including a medial web portion and top and bottom flange portions formed integral with said web portion at its opposite ends and recessed inside to receive the respective beaded edges of said binding strap on each side of said web portion, said web portion having a button-like formation projecting therefrom substantially at right angles to the general plane of the I-shaped buckle and including a laterally enlarged head to engage with two of said slots in the respective end portions of said binding strap as brought together in use.

2. A device for binding conductors comprising in combination a buckle having a pair of spaced, substantially U-shaped flange portions, a web portion interconnecting said flange portions to form a generally I-shaped body member, projection means secured to said web portion and extending essentially transverse to the plane of said body member on one side thereof, said projection means including a pair of hook members at the free end thereof and a binding strap formed on one side thereof with beads extending along the opposite longitudinal edges thereof and having a row of spaced slots formed along the medial line of the strap, said slots being dimensioned to accommodate said hook members, a portion of said strap being positioned within the flange portions on each side of said web portion whereby the hook members on said projection means are engaged within said slots.

3. A device for binding conductors comprising in combination a buckle having a pair of spaced, substantially U-shaped flange portions, a web portion interconnecting said flange portions to form a generally I-shaped body member, projection means secured to said web portion and extending essentially transverse to the plane of said body member on one side thereof, said projection means including a pair of hook members at the free end thereof and a binding strap formed on one side thereof with beads extending along the opposite longitudinal edges thereof and having a row of spaced slots formed along the medial line of the strap, said slots being dimensioned to accom-

modate said hook members, the center of said strap between the beaded edges on said one side being bulged outwardly while the other side of said strap is essentially flat, a portion of said strap being positioned within the flange portions on each side of said web portion whereby the hook members on said projection means are engaged within said slots.

4. A device for binding conductors comprising in combination a buckle having a substantially I-shaped body member having a pair of spaced parallel end flanges and a central interconnecting web portion, hook members having a generally crescent-shaped cross section integral with the free ends of each of said end flanges, and laterally enlarged head means secured to said web portion on one side thereof and extending essentially transverse to the plane of said body member, and a binding strap formed on one side thereof with beads extending along the opposite longitudinal edges thereof and having a row of spaced slots formed along the medial line of the strap, said beads

being dimensioned to the size of said hook members, the width of said strap being essentially equal to the length of said web portion, a portion of said strap being positioned within the end flanges on each side of said web portion whereby the hook members on said projection means are engaged within said slots.

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