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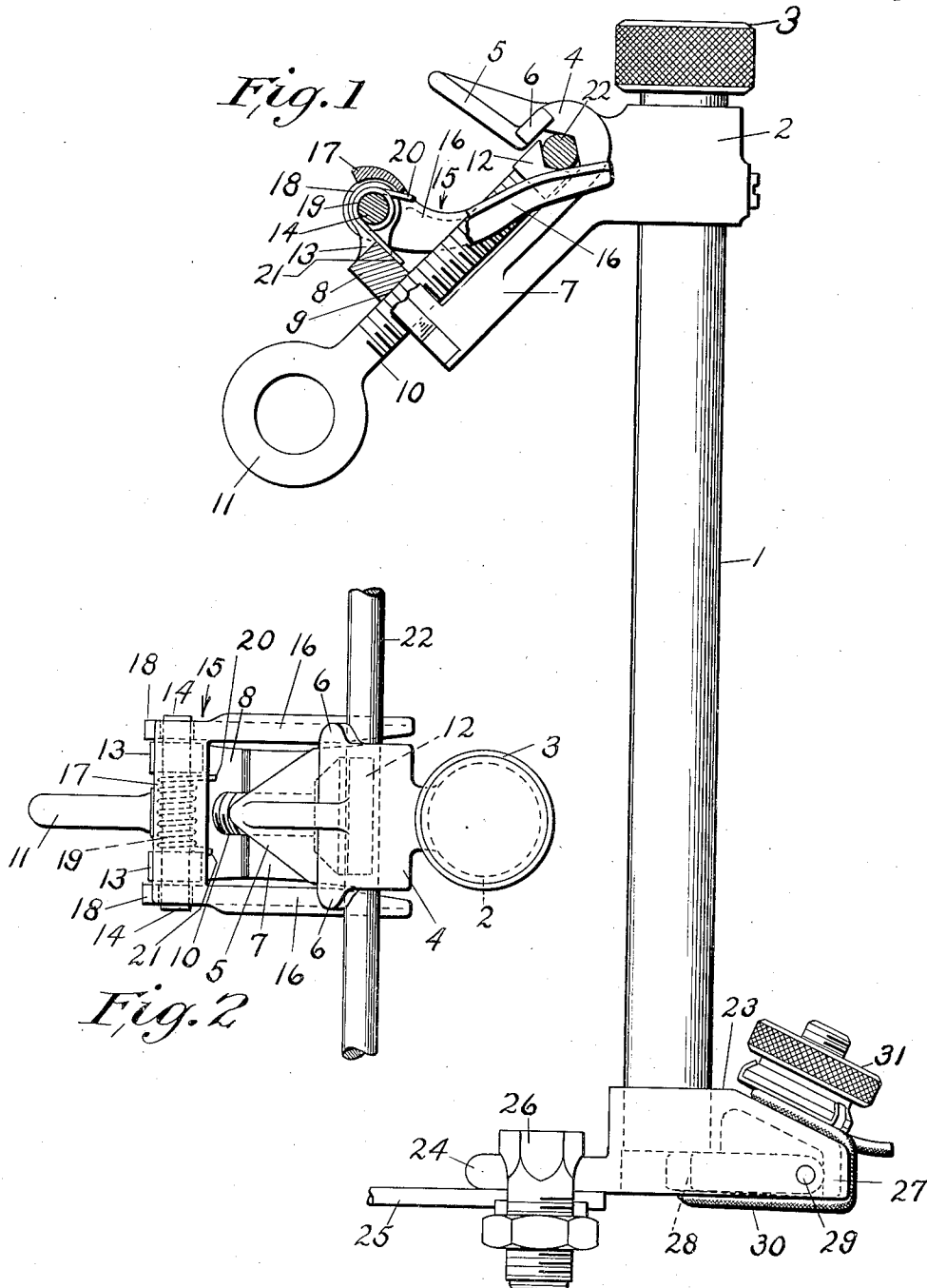
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2,234,022

CLAMPING MEANS

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2 Sheets-Sheet 1



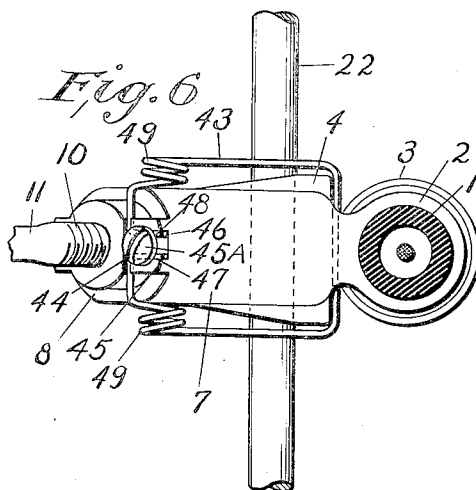
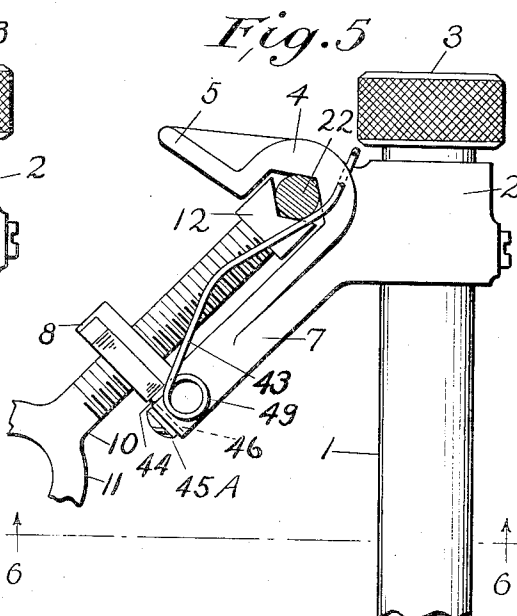
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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CLAMPING MEANS

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10 Claims. (Cl. 173—273)

This invention relates to improvements in clamping means for wire-tapping devices such as suspension cutouts.

It is an object of this invention to provide for wire-tapping devices such as suspension cutouts a clamping device adapted to automatically maintain a predetermined clamping engagement with an electric line conductor from which the cutout is suspended and which is manually operable for increasing the clamping pressure on the conductor beyond the automatically maintained predetermined clamping engagement.

More specifically, it is an object to provide for wire-tapping devices a spring-actuated clamp and a manually operable clamp for engaging a line conductor from which the cutout may be suspended.

A further object is to provide an automatic clamp adapted to engage a line conductor from which a wire-tapping device is suspended and to prevent the cutout from being thrown from the wire prior to or during manual clamping operation.

Other advantages will be apparent from the disclosure.

In the drawings:

Fig. 1 is a view in side elevation, partly in section, of a preferred embodiment of this invention.

Fig. 2 is a top plan view of the device shown in Fig. 1.

Fig. 3 is a fragmentary view in side elevation of a modified embodiment of this invention.

Fig. 4 is a top plan view of the device shown in Fig. 3.

Fig. 5 is a fragmentary view in side elevation of a further modified form of this invention.

Fig. 6 is a view taken on the line 6—6 of Fig. 5.

Like parts are identified by the same reference characters throughout the several views.

The device shown in Figs. 1 and 2 comprises a fuse tube or cartridge 1 which is provided at its upper end with a metal ferrule 2 having a removable cap 3 which closes the upper end of the tube.

Comprising an integral part of the ferrule 2 is a clamp including a V-shaped clamping contact jaw 4, a flat wedge-like guiding plate 5, stops 6 projecting laterally from the jaw 4, and a downwardly-extending flat arm 7 having a base portion 8 normal thereto and provided with a threaded aperture 9.

Threadedly movable through the aperture 9 and extending toward the jaw 4, is a clamping

bolt 10 having an operating eye 11 at one end and a V-shaped clamping jaw 12 rotatably secured to the other end for cooperation with the jaw 4. As indicated, the jaw 12 is maintained in alignment with the jaw 4 by means of the arm 7.

The base 8 is provided with relatively spaced correspondingly apertured pivot supporting lugs 13 connected by means of a pivot arm 14 which extends beyond the lugs to provide pivot bearings upon which an automatic clamping jaw 15 is pivotally mounted.

The clamping jaw 15 comprises a pair of spaced clamping fingers or portions 16 connected by a plate 17 and each being pivotally mounted at 18 upon a projecting end of the pin 14. A coil spring 19 is mounted on the pin 14 between the lugs 13, one end 20 of the spring being engaged with the plate 17 and the other end 21 being engaged with the base 8.

As indicated in the drawings, the plate 17 serves as a hood for the spring 19 tending to prevent collection of sleet upon the spring and pin 14. The spring is held under tension between the plate 17 and base 8 and biases the fingers 16 of the clamp 15 toward the stops 6 and against which the fingers normally rest when the cutout is removed from a wire.

When it is desired to mount the cutout upon a wire or conductor as indicated at 22, the jaw 12 will be withdrawn from the jaw 4 by means of the bolt 10 a sufficient distance to permit the wire to be passed between the jaw 12 and the nearest portion of the guiding plate 5. Thereupon, the cutout may be mounted upon a suitably insulated manipulation stick (not shown) in engagement with the eye 11.

As the guiding plate 5 is passed over the wire 22, the latter will engage the fingers 16 to move them from the stops 6 and permit the wire to enter the space adjacent the jaw 4. When the wire 22 has been thus positioned, it will be firmly held by the fingers 16, through the action of the spring 19, against the stops 6, thus preventing accidental removal of the cutout from the wire prior to and during clamping operations of the jaw 12.

As soon as the cutout has been mounted on the wire 22, the bolt 10 may be manipulated by the mounting stick (not shown) to move the jaw 12 toward the jaw 4 until the wire 22 is firmly clamped between the jaws.

The lower end of the tube 1 is provided with a contact ferrule 23 which leaves the lower end of the tube open. The ferrule 23 is provided

with a terminal portion 24 to which a conductor 25 may be suitably attached by clamping means such as a bifurcated clamping bolt 26 such as shown in the patent to Clarence J. Lemont, Number 2,054,940, issued September 22, 1936.

The ferrule 23 is also provided with a hollow hood-like portion 27 within which a suitably downwardly biased lever 28 is pivotally mounted at 29. A fuse link 30, positioned in the tube 1, extends over the lever 28 and is secured to the hood 27 by means of a clamping nut 31. Thus the ferrules 2 and 23 are electrically connected and the lever 28 is normally held in the broken line position. When the fuse link is ruptured by reason of an overload or short circuit, the lower portions of the link are expelled from the tube by means of the lever.

After the fuse has blown as indicated, the cutout may be removed from the wire 22 in a manner obvious from the previous description and re-fused for subsequent operation.

The cutout shown in Figs. 3 and 4 is similar to that shown in Figs. 1 and 2, but differs in the fact that the ears 6 in the latter figures are not provided and that the automatic clamping means in Figs. 3 and 4 comprises a resilient wire 35 which is bent to provide a stop portion 36 engageable with the ferrule 2, clamping or contact portions 37 reinforced by tubes 38, and coils 39. The ends of the clamping wire are secured to the arm 7 by means of a clamping screw 40 in the manner indicated in Fig. 3.

The operation of the Figs. 3 and 4 structure is similar to that disclosed with reference to the Figs. 1 and 2 device. The resilient wire holds the reinforcing tubes 38 in firm engagement with the conductor 22 and tends to prevent accidental removal of the cutout from the conductor when the clamping jaw 12 is being manipulated.

The structure shown in Figs. 5 and 6 is similar to that shown in the previously described figures. However, the clamping wire 43 is not provided with a reinforced clamping portion and is secured to the lower end of the arm 7. The lower end of the arm is grooved at 44, 45 and 46 to receive the ends 47 and 48 of the wire and a clamping screw 45A retains the ends in the respective grooves 45 and 46.

In the Figs. 5 and 6 structure, the wire 43 is provided with a coiled portion 49 for giving increased resiliency thereto but is not provided with a stop portion as in the Fig. 3 structure for limiting the movement of the wire when the cutout is removed from the conductor 22.

Although I have shown and described this invention in connection with a suspension cutout fuse, it will be obvious that its use is not limited to suspension cutouts, but is adapted for use in connection with any line wire tap-off devices having a similar clamping device. Therefore, it will be understood that the appended claims are not to be limited to suspension cutout fuses unless specifically so stated therein.

From the foregoing, it is apparent that I have provided for wire-tapping devices, a clamp which automatically clutches a conductor when the device is being attached thereto and prevents accidental removal of the device during manual manipulation of the clamp and which maintains electrical contact of the device with the conductor during such manipulation.

I claim:

1. A wire-tapping device including a manually operable clamp for engagement with a line wire in combination with a resiliently urged wire-

gripping element adapted to maintain contact with said wire and to prevent accidental removal of the device from said wire during manual manipulation of said clamp and a spring urging said element toward wire-contacting position, said clamp and said element exerting a contact pressure on said wire independently of each other.

2. A wire-tapping device comprising a contact jaw for engagement with a line wire, a manually operable clamping jaw movably connected with the contact jaw for clamping engagement with said wire, and a gripping element operatively connected with said contact jaw and including means biasing said element for gripping relationship with said wire.

3. A wire-tapping device comprising a contact jaw having a clamping portion for engagement with a line wire, a manually operable clamping jaw movably connected with the contact jaw for clamping engagement with said wire, a gripping element pivotally connected with the contact jaw for movement relative thereto, and spring means urging said element toward the clamping portion of said contact jaw.

4. A wire-tapping device comprising a contact jaw having a clamping portion for engagement with a line wire, a manually operable clamping jaw movably connected with the contact jaw and adapted to clamp said wire, a gripping element pivotally connected with the contact jaw for movement relative thereto and for clamping engagement with said wire, spring means biasing said element toward gripping relation to the clamping portion of said contact jaw, and stop means adjacent said clamping portion disposed in the path of biased movement of said element.

5. A wire-tapping device including a contact jaw having a clamping portion for engagement with a line wire, an arm projecting from said contact jaw, a manually operable clamping jaw carried by said arm and movable into clamping relation to said contact jaw and adapted to clamp said wire to said clamping portion, a gripping element pivotally carried by said arm and comprising a pair of spaced fingers movable in a path transversely relative to the clamping portion of said contact jaw for engagement with said wire, said contact jaw being positioned between said fingers, said element and said contact jaw exerting contact pressure on said wire independently of each other, a spring biasing said element, and stop means adjacent said clamping portion limiting the extent of biased movement of said element.

6. A wire-tapping device including a contact jaw, an arm projecting from said contact jaw, a manually operable clamping jaw carried by said arm and movable into clamping relation to said contact jaw, a biased gripping element movably carried by said arm and comprising a pair of spaced contact portions movable in a path transversely relative to said contact jaw, said contact jaw being positioned between said contact portions, and means biasing said element.

7. A wire-tapping device including a contact jaw, an arm projecting from said contact jaw, a manually operable clamping jaw carried by said arm and movable into clamping relation to said contact jaw, and a biased gripping element movably carried by said arm and comprising a length of resilient wire bent to form a stop portion intermediate its end engageable with said contact jaw in one direction of movement and

a pair of spaced contact portions between which said contact jaw is positioned.

8. A wire-tapping device including a contact jaw, an arm projecting from said contact jaw, a manually operable clamping jaw carried by said arm and movable into clamping relation to said contact jaw, and a biased gripping element movably carried by said arm and comprising a length of resilient wire bent to form a stop portion intermediate its end engageable with said contact jaw in one direction of movement and a pair of spaced contact portions between which said contact jaw is positioned, said wire having resilient coiled portions to add increased resiliency thereto.

9. A wire-tapping device including a contact

jaw, an arm projecting therefrom, a manually operable clamping jaw carried by said arm, and a biased gripping element movably carried by said arm and comprising a length of resilient wire bent to form a pair of spaced contact portions between which said contact jaw is positioned.

10. A wire-tapping device including a contact jaw, an arm projecting therefrom, a manually operable clamping jaw carried by said arm, and a biased gripping element movably carried by said arm and comprising a length of resilient wire bent to form a pair of spaced contact portions between which said contact jaw is positioned, said wire having resilient coiled portions.

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