Jan. 21, 1969 H. KOBRYNER 3,423,723

JAW CONSTRUCTION FOR BLADE-JAW CONTACTS

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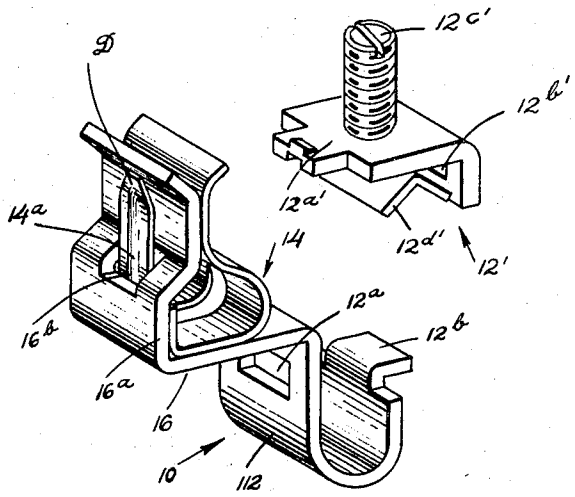


Fig. 1

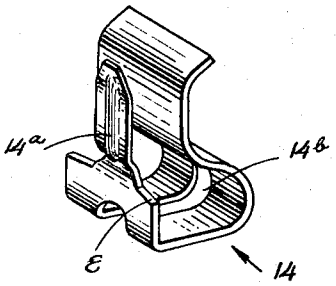


Fig. 1a

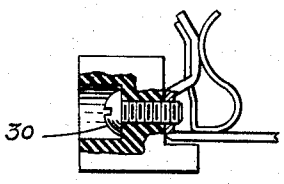


Fig. 2a

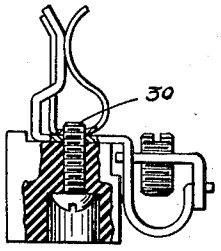


Fig. 2b

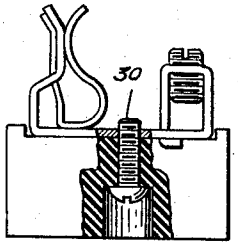


Fig. 2c

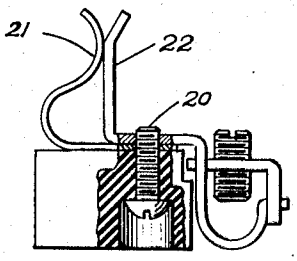


Fig. 3a

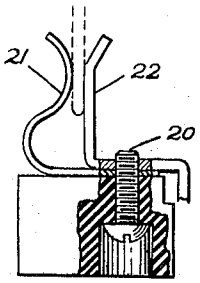


Fig. 3b

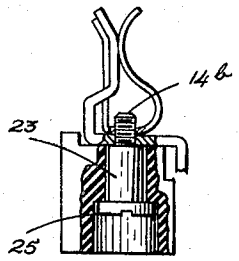


Fig. 4

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JAW CONSTRUCTION FOR BLADE-JAW CONTACTS

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Int. Cl. H01r 13/24, 7/12

ABSTRACT OF THE DISCLOSURE

A jaw assembly for mating with a blade contact. The assembly is constituted by a pair of jaws, one being rigid and of L-shaped cross-section and the other being resilient, of U-shaped cross-section and being interleaved with the former.

This invention relates to electrical contacts, and in particular, to contacts which have commonly become known as blade-jaw type contacts.

The blade-jaw type contact is the most common of the various make-break joints in electrical equipment. Examples appear in numerous plugging and switching devices such as: watt hour meters and their respective sockets, blade type fuses and their respective fuse clips, lamp cord plugs and the wall receptacle, and knife switches.

In all these devices, the blade is generally a flat piece of copper, and the jaw in its simplest form, comprises a U-shaped piece of metal whose two leaves contact the blade on opposing sides. In the description which follows, the jaw member contact will be described as constituted by a pair of opposing jaws. In other words, while the member is singularized (jaw) the actual makeup is of a pair of opposing jaws. The opposing jaws are biased inwardly and if the jaw metal resilience is not sufficient for the exertion of the desired pressure, an additional spring is conventionally added.

The conductivity or quality of the electrical joint depends upon the contact area and pressure, the two being related such that an inadequacy in either can be compensated to a certain extent by the other.

Requirements of the jaw member contact are: that it provide a low resistance contact with the blade regardless of the period of time of engagement and even if unserviced for years; that it is uninfluenced by inaccurate assembly; and that it is simple and inexpensive to produce. A further requirement is that the jaw take on a physical configuration which is adaptable to carrying a terminal for coupling to the electric circuit. This terminal may be a separate piece of metal joined with the jaw by, for example, screws or it may be integral with the jaw. Viewed from the aspect of performance, the latter construction is preferable since no resistance is introduced via the mechanical joint. The one-part construction, however, is more expensive since it requires a blanking die and wastes substantial material.

Accordingly, it is the object of this invention to provide a jaw member or assembly for a blade-jaw type contact arrangement which provides a low resistance contact with the blade; which is not dependent upon assembling accuracy; and which is simple and inexpensive to manufacture.

It is the further object of this invention to provide jaws of the foregoing type which are integral with the appended terminal member to provide the lowest resistance path between jaw and terminal.

It is a feature of this invention that the jaw parts may be economically derived from strip material and assembled to each other without any additional joining elements such as screws or rivets.

It is a further feature of this invention that the relative

position of the parts is determined solely by their shape.

The above mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will best be understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a partially exploded perspective of the inventive jaw assembly.

FIG. 1*a* is a detail of the spring jaw.

bly in various terminal configurations and mountings.

FIGS. 2*a* through 2*c* illustrate the inventive jaw assem-

FIGS. 3*a* and 3*b* show prior art jaw assemblies.

FIG. 4 illustrates a preferred mounting arrangement for the inventive jaw assembly.

Turning now to the invention, and in particular to FIG. 1, the inventive jaw assembly may be seen to consist of two parts. The first is a copper contact leaf indicated generally at **10**, which continues into the terminal member **12**. The other is a strong resilient spring member **14** (detail being shown in FIG. 1*a*) of steel or bronze, depending upon the desired current carrying capacity of the assembly. Conventional clamping member **12'** completes the terminal end of the assembly. It will be appreciated by those skilled in the art that the terminal end is assembled in the usual manner by entry of tongues **12***a'* and **12***b* into apertures **12***a* and **12***b'* respectively.

It is to be noted that the main current carrying member of the terminal, that is, member **12**, is merely a continuation of the jaw without any ohmic resistance being introduced by adjoining element or joint. It is also to be noted that it is integral member **12** rather than **12'** which is the primary contact since the wire conductor is laid on this member and pressure applied by the screw **12***c'* through the vice member **12***d'*.

Directing our attention again to the jaw assembly which constitutes the invention herein, it may be seen that it is constructed of two parts, the first of which element **16** has basically an L-shape in cross-section with a slight U-shaped offset in the vertical arm. A slot **16***b* is included in the offset for purposes which will be explained. The spring jaw **14** of the jaw assembly is essentially of U-shaped cross-section with one arm **14***a* narrowed for entry into the slot **16***b*. (Preferably the narrowed arm **14***a* is ribbed to increase its stiffness.) From the figure, it may be seen that one arm may also be considered of S-shape opposing the offset.

In the configuration shown, upward and downward motion of the spring member is restricted; the upward movement being prevented by the flanged portion of the narrowed arm of spring **14** abutting the sides of the slot at point E, and the downward motion being prevented by the adjacency of the base. Because the relative position of the parts is determined solely by their shape, it may be seen that the spring jaw, which is not rigidly held to the opposing jaw, will align itself and lay flat upon an inserted blade. The L-jaw will similarly assume an aligning attitude when the assembly is mounted in the manner to be described with reference to FIG. 4.

The jaw assembly may be mounted upon any base by an auxiliary element such as screw **30** grasping the L-shaped jaw in any convenient place (as shown in FIGS. 2*a* through 2*c*), save for the area of contact with a blade.

While the mounting feature may at first blush appear of minor significance, when it is compared to existing conventional arrangements, its importance becomes better understood. A conventional arrangement is shown in FIG. 3*a* where as may be seen a pair of jaws **21** and **22** are retained in position by means of the mounting screw **20**. Since this screw has the dual function of retaining the jaws' respective relative positions and also mounting the assembly, its position is rather restricted. Further, screw

20 must be properly tightened and insurance must be provided against subsequent loosening. Otherwise, with screw 20 loosening so that there is play between elements 21 and 22 of the jaw assembly, contact pressure is decreased and the desired characteristics are lost (see FIG. 3*b*).

With the inventive jaw assembly, the floating jaw assembly provides positive advantages. For example, FIG. 4 shows an arrangement wherein a spacer 23 is employed to insure play between the screw head 25 and the flange 26. The screw is threaded into the base of the L-shaped member as shown and passes through an aperture 14*b* in spring jaw 14. Needless to say, elements 23 and 25 may also be unitary. With this arrangement, the whole assembly may align itself with a rigidly positioned blade.

While the principles of the invention have been described in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of the invention as set forth in the objects thereof and in the accompanying claims.

What is claimed is:

1. A jaw assembly for blade contacts comprising a first contact jaw including a flat highly conductive member having a substantially L-shaped cross-section; and a second spring jaw of substantially U-shaped cross-section cradled in said first jaw and having one arm thereof passing through a slot in the upstanding arm of said L-shaped jaw, the downward progress of the U-shaped jaw being limited by the base of the L-shaped member, and means for limiting the upward progress of the U-shaped jaw.

2. The jaw assembly claimed in claim 1 wherein said jaw of U-shaped cross-section has one arm narrowed for a considerable portion thereof flanging toward the base of the U, said flange being of greater width than said slot in said jaw of L-shaped cross-section to provide the means for limiting the upward progress of the U-shaped jaw.

3. The jaw assembly claimed in claim 2 wherein the upstanding arm of said jaw of L-shaped cross-section has an offset U bend therein to facilitate the insertion and retention of said jaw of U-shaped cross section, one arm of said U-shaped offset flaring away from the opposing jaw for facilitating the acceptance of a blade and simultaneously retaining said jaw of U-shaped cross-section against upward progress, and the other arm of said U-shaped offset including said slot.

4. The jaw assembly claimed in claim 3 wherein said jaw of said substantial U-shaped cross-section has its wider arm bent inwardly towards said narrow arm and thence outwardly to provide a flared entrance for said blade and contact with said jaw of L-shaped cross-section.

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