Sept. 22, 1942. R. N. FALGE ET AL 2,296,632

CONNECTOR

Filed Oct. 11, 1940

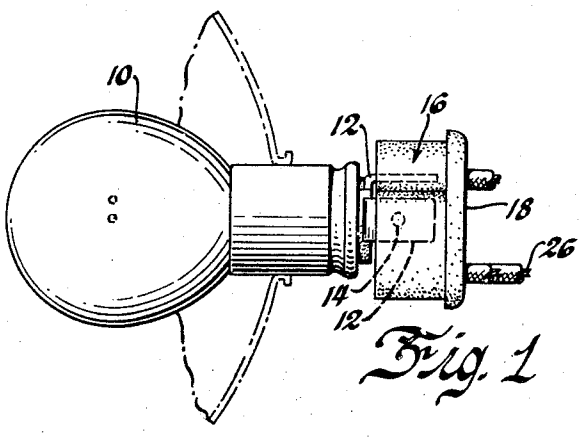


Fig. 1

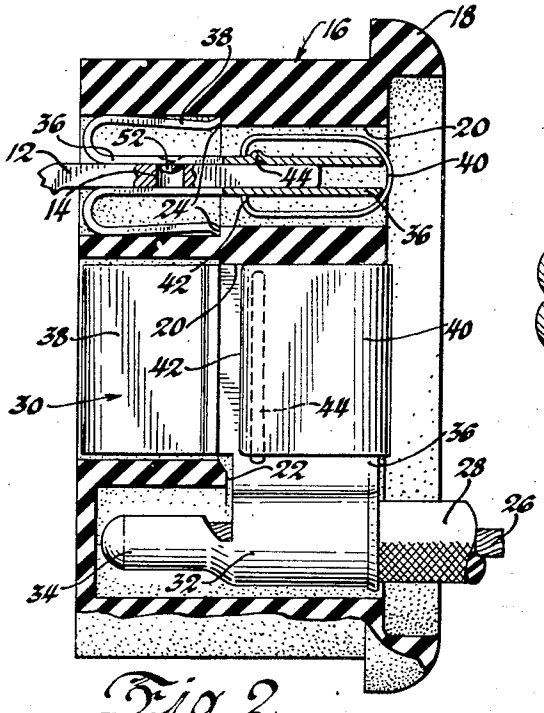


Fig. 2

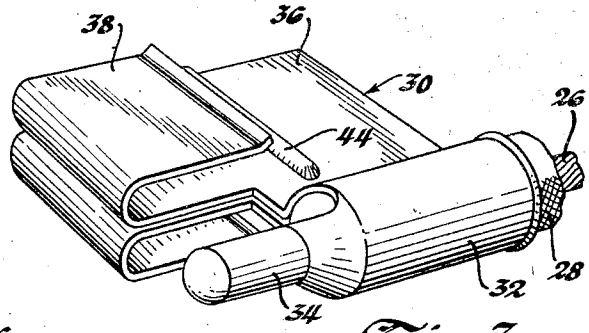


Fig. 3

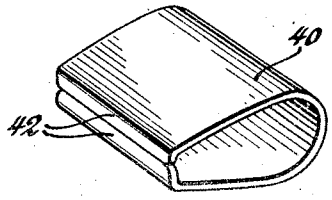


Fig. 4

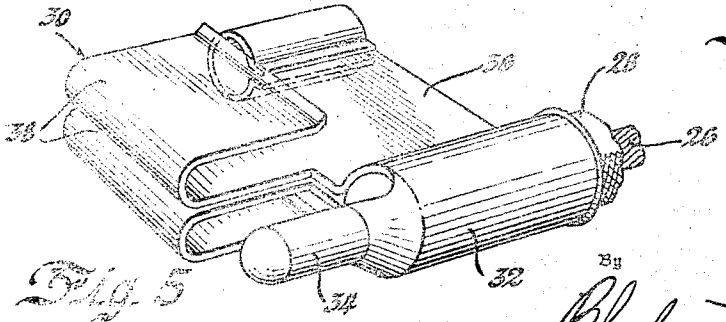


Fig. 5

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UNITED STATES PATENT OFFICE

2,296,632

CONNECTOR

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Application October 11, 1940, Serial No. 360,756

2 Claims. (Cl. 173—328)

This invention has to do with an improvement in connectors for electrical wiring, particularly connectors designed for attachment to the terminals of bulbs such as are used on automobile headlamps or to the terminals of complete light projecting units of the type known as "Sealed Beam" headlamps. It may also be used to connect the ends of wires together wherever desired.

The invention is an improvement on the invention described and claimed in the application of Harry C. Doane, Serial No. 358,777 filed Sept. 28, 1940. In that application there is disclosed a type of connector consisting of a housing of insulating material containing one or more passages in each of which is secured a clip adapted to be fastened to the end of a conductor, comprising a pair of parallel sheet metal members or blades adapted to receive a terminal between them. The ends of the blades may be doubled back upon themselves to engage the interior of the passage to yieldingly press the blades against the terminal. Doane found that in order to obtain good contact and at the same time permit the clip to float in the passage so that it may properly engage the terminals despite variations in the location of the latter due to manufacturing inaccuracies, it was desirable to provide additional spring means to yieldingly press the blades against the terminals. Doane's spring means took the form of independent springs, preferably coil springs, interposed between the blades and the interior of the passage. With this arrangement good contact was insured at all times.

We have found that the Doane construction may be improved and simplified by substituting a single spring for the two springs used by Doane, and making this spring of U-shape so as to engage over the blades and yieldingly urge them toward each other. The spring may be assembled with the clip before it is inserted in the passage in the insulator thereby making assembly easier. It is preferably of such dimensions that there is clearance between the spring and the walls of the passage so that the clip may float in the passage to some extent to enable it to cooperate with terminals which may not be accurately positioned on the bulb base or other part. It will usually be found desirable to provide stops or abutments of some sort on the blades to prevent the springs from becoming accidentally detached from the clips.

Various modifications will occur to those skilled in the art.

In the drawing:

Figure 1 is a side view of the connector applied to a lamp bulb.

Figure 2 is a composite sectional view showing the clip in two different positions in an insulator housing.

Figure 3 is a perspective view of the clip with the cooperating spring removed.

Figure 4 is a perspective view of the spring.

Figure 5 is a view showing another way of attaching the spring to the clip.

In the drawing, 10 indicates a conventional incandescent lamp provided with spaced terminals 12. Each of the terminals is preferably apertured as indicated at 14 in Figure 2.

16 indicates a connector consisting of an insulator 18 having one or more passages therethrough, each passage having an abutment 22 extending into it toward one end. Passages 20 are provided with shoulders 24 at opposite sides thereof as indicated in Figure 2.

26 indicates a conductor for leading current to the connector. The conductor is provided with the usual insulation indicated at 28. To the conductor is secured clip 30 consisting of sleeve portion 32 clamped about the insulation 28 and having reduced end portion 34 soldered to the end of the conductor. This soldering may be easily accomplished by dipping the conductor, with clip attached, in molten solder. Clip assembly shown in Figure 3 or Figure 5 may be dip soldered without solder touching blade portions 36 or return bent portions 38.

36 indicate blades extending laterally from cylindrical portion 32 and provided with return bent yielding portions 38 serving as detents as hereinafter pointed out.

40 indicates a U-shaped spring preferably provided with inturned free ends as indicated at 42. The clip is adapted to be engaged about the blades 36 as best shown at the top of Figure 2. To prevent chance dislodgement of one of the springs 40 blades 36 may be provided with locating embossing 44.

If preferred, the spring 40 may be fitted over the free ends of the blades 36 farthest removed from cylindrical portion 32 as shown in Figure 5.

In assembling the connector the spring 40 is placed in position on the clip as shown in Figure 2 or Figure 5 and then the clip is inserted in passage 20 from the right-hand end as indicated in Figure 2. By the time the clip has come in contact with lug 22, which prevents its further insertion, the returned bent portions 38 have snapped behind shoulders 24 thereby preventing the withdrawal of the clip.

Spring 40 is preferably made of spring steel so that it will exert considerable force on the blades 30 tending to urge them into engagement with terminals 12. It may be found desirable to provide one of the blades 36 with a depressed portion 52 adapted to snap into opening 14 in the terminal and prevent chance displacement.

We claim:

1. A connector comprising an insulator having a passage therethrough and a socket therein parallel with said passage and communicating with the passage at one side thereof, a clip comprising an intermediate tubular portion fitted in said socket, a conductor secured in said tubular portion and extending from the open end of said socket, blades integral with said tubular portion extending laterally from said portion into said passage and adapted to receive a terminal between them, said blades being provided with return bent portions engaging the walls of the passage and yieldingly urging the main body portions of the blades toward each other, the walls of said passage being provided with shoulders engaged by the ends of said return bent portions to prevent withdrawal of the clip from the socket and passage in one direction, the engagement of a wall of the socket with the clip preventing withdrawal of the clip in the opposite direction and a U-shaped spring clip embracing said blades within said passage at the end opposite said return bent portions and adapted to yieldingly press said blades toward each other to increase the pressure on the terminal, said clip being normally spaced from the walls of said passage.

2. A connector comprising an insulator having a passage therethrough and a socket therein parallel with said passage and communicating with the passage at one side thereof, a clip comprising an intermediate tubular portion fitted in said socket, a conductor secured in said tubular portion and extending from the open end of said socket, blades integral with said tubular portion extending laterally from said portion into said passage and adapted to receive a terminal between them, said blades being provided with return bent portions engaging the walls of the passage and yieldingly urging the main body portions of the blades toward each other, the walls of said passage being provided with shoulders engaged by the ends of said return bent portions to prevent withdrawal of the clip from the socket and passage in one direction, the engagement of a wall of the socket with the clip preventing withdrawal of the clip in the opposite direction and a U-shaped spring clip embracing said blades within said passage and at the end opposite said return bent portions and adapted to yieldingly press said blades toward each other to increase the pressure on the terminal, said clip being normally spaced from the walls of said passage, one of said blades being shaped to provide an abutment, and said U-shaped clip having an inwardly bent end adapted to engage said abutment to hold the U-shaped clip in place.

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