

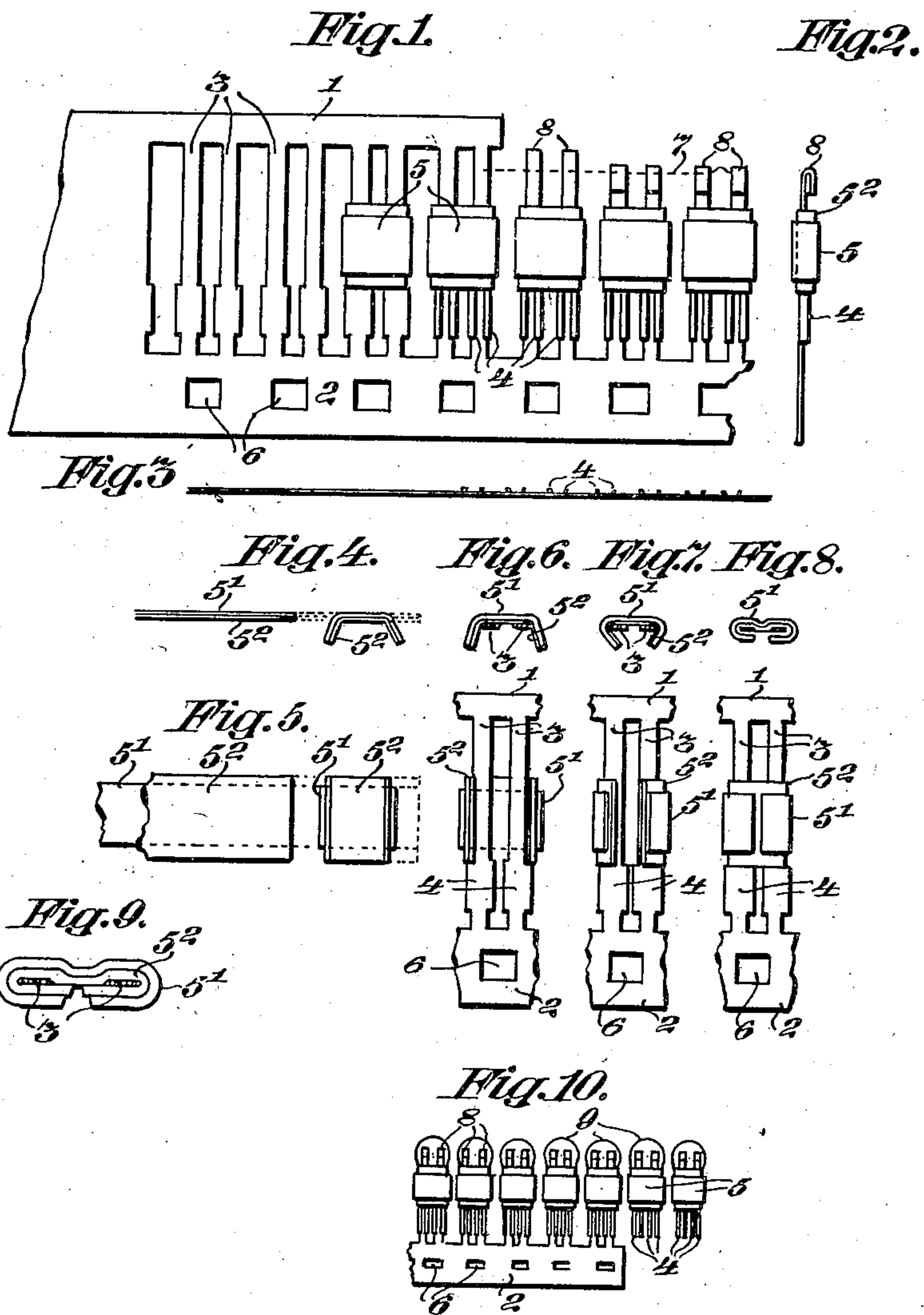
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METHOD OF MANUFACTURING LOW TENSION BRIDGE FUSES

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METHOD OF MANUFACTURING LOW-TENSION BRIDGE FUSES

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My invention relates to a method of manufacturing low-tension bridge fuses i. e. fuses having an incandescent wire bridging the current conductors. By such method completely uniform fuses of such kind may be manufactured without any manual labour.

The improved method consists therein that a binding clip made up of conducting material for example sheet metal provided with an insulating covering or layer at one side is applied to the fuse laminæ forming the current conductors by bending the ends of said clip and pressing them onto said laminæ whereupon the required finishing operations may be performed.

Conveniently the fuse laminæ as well as the binding clips for the pairs of fuse laminæ are produced each from a continuous tape and both said tapes are automatically fed or carried to the working place, at which suitable lengths are cut from the clip tape having an insulation on one side, then each length is laid around a pair of laminæ of the laminæ tape, which by preference may be tinned previously, and finally the applied length is firmly secured to the laminæ by pressing. Thus the fuses may be manufactured from the raw materials in an uninterrupted series of operations without any additional work.

After having cut off one longitudinal marginal portion of the laminæ tape the incandescent wire or filament may be secured to the free ends of the laminæ, which ends have been painted with a flux and folded back, so as to form a hook. For such purpose the wire is inserted in the hook shaped ends of two laminæ and said ends are pressed so that the wire is firmly clamped, the tin which is present in such hook is melted by heat for fixing the wire by soldering. The free ends of the laminæ tape yet being connected by the second longitudinal marginal portion of said tape are bent or curved so that a channel is produced in which the current conducting wire may be inserted and soldered therein.

This continuous laminæ tape has as a rule only in one of its longitudinal marginal portions a series of holes for enabling the transport or feeding movement of the tape during the manufacturing of the fuses.

In the drawings:

Fig. 1 shows the continuous laminæ tape in the different steps. Figs. 2 and 3 show such tape in an end and top view respectively. Figs. 4 and 5 show the continuous clip tape as also a clip cut off therefrom in a top and front view respectively. Figs. 6, 7 and 8 illustrate the different stages in securing a clip on a pair of laminæ. Fig. 9 shows in an enlarged scale the cross section of the fuse provided with the clip. Fig. 10 shows the fuses yet on the tape but provided with a head produced by dipping and the dipped fuses after having cut them off from the tape.

For manufacturing incandescent or low tension bridge fuses according to the present invention a continuous laminæ tape (Figs. 1-3) is used, which has two longitudinal marginal strips 1, 2 and pairs of transversal laminæ 3, 3 the base portion 4 of which is by preference enlarged.

On each of the pairs of laminæ a binding clip 5 is applied and secured, which holds the laminæ in position. Said clips 5 are also obtained from a continuous tape, which comprises a conducting or metal strip 5¹ and an insulating strip 5², which is fixed on one side thereof say by cementing and has by preference a larger breadth than the conducting strip 5¹.

The continuous laminæ tape (1-4) which is by preference tinned previously, as well as the clip tape (5¹, 5²) is automatically carried to the working place, at which the finishing operations with the exception of the dipping operation for producing the fuse head are performed without any manual labour.

For exactly stepping or feeding the laminæ strip a series of holes 6 is punched out, said holes being by preference edged for example square shaped.

After having cut off a piece or length corresponding to a clip from the clip tape the two ends of such length are bent so as to take a steep position but less than 90° in relation to the center portion, as shown in Fig. 4. Then the piece 5¹, 5² is applied to a pair of laminæ 3 (Fig. 6), whereupon the ends of such piece are bent inwards (Fig. 7) and finally entirely pushed down and firmly se-

cured by pressing (Fig. 8). Thereby the two laminæ are firmly held in position and insulated from each other.

After having cut off the marginal strip 1 the incandescent or bridging wire 7 is fixed in the following manner:

The marginal strip 1 having been cut off the free ends 8 of the lamellæ 3 are moistened by a flux, then bent approximately at right angles and after having applied the incandescent wire, completely folded back and pressed, so that the wire is clamped in hook shaped folded ends 8 of the lamellæ. The tin in such folds 8 is melted thereafter by heat, whereby the wire is rigidly secured in the folds 8.

The base portions 4 of the lamellæ are curved, beaded or its edges bent off, so that between its longitudinal edges a channel is formed, in which the current conducting fuse wires may be readily inserted and secured say by soldering. Finally the free ends of the fuses, which are yet held together by the second marginal strip 2 are provided in any known manner with the igniting head 9. This may be effected for example by immersing said ends into an igniting mass, for forming the heads 9 (Fig. 10), whereupon the fuses may be separated by cutting off the second marginal strip 2.

What I claim is:—

1. Method of manufacturing low tension fuses having an incandescent wire bridging a pair of conduction lamellæ, consisting in cutting lengths from a continuous tape consisting of a conducting band having an insulating layer at one side thereof, applying each length to a second continuous conducting tape which has a plurality of pairs of such lamellæ between two marginal longitudinal strips, securing the applied length to one pair of said lamellæ of the second named tape by bending and folding the ends of the length back onto the two lamellæ and pressing the clip thus formed, cutting off one marginal longitudinal strip of the lamellæ tape, bending and folding the free tinned ends of the lamellæ which ends are painted by a flux, over the bridging wire, securing the latter by compressing the folded ends of the lamellæ and then melting the tin present in the folded ends by heating, so that the wire is soldered in the said ends, applying an igniting mass to the ends of the lamellæ, so as to enclose the incandescent wire, and cutting off the second marginal longitudinal strip of the lamellæ tape, all of said operations up to and with the exception of the last named applying operation being performed in an uninterrupted series without any hand labor.

2. Method of manufacturing low tension fuses having an incandescent wire bridging a pair of conducting lamellæ, consisting in cutting lengths from a continuous tape consisting of a conducting band having an in-

insulating layer at one side thereof, applying each length to a second continuous conducting tape which has a plurality of pairs of such lamellæ between two marginal longitudinal strips, securing the applied length to one pair of said lamellæ of the second named tape by bending and folding the ends of the length back onto the two lamellæ and pressing the clip thus formed, cutting off one marginal longitudinal strip of the lamellæ tape, bending and folding the free tinned ends of the lamellæ which ends are painted by a flux, over the bridging wire, securing the latter by compressing the folded ends of the lamellæ and then melting the tin present in the folded ends by heating, so that the wire is soldered in the said ends bending marginal portions of the lamellæ so as to form channels for receiving the current leading wires, finally applying an igniting mass to the ends of the lamellæ, so as to enclose the incandescent wire and cutting off the second marginal longitudinal strip of the lamellæ tape, all of said operations up to and with the exception of the last named applying operation being performed in an interrupted series without any hand labor.

3. Method of manufacturing low tension fuses having an incandescent wire bridging a pair of conducting lamellæ, consisting in forming a continuous conducting tape so as to have pairs of such lamellæ between two marginal strips, applying an insulating layer to one side of a second tape consisting of conducting material, cutting lengths from said second named tape, applying and securing the applied length to one pair of said lamellæ of the second named tape by bending and folding the ends of the length back onto the two lamellæ and pressing the clip thus formed, cutting off one marginal longitudinal strip of the lamellæ tape, bending and folding the free tinned ends of the lamellæ which ends are painted by a flux, over the bridging wire, securing the latter by compressing the folded ends of the lamellæ and then melting the tin present in the folded ends by heating, so that the wire is soldered in the said ends, applying an igniting mass to the ends of the lamellæ, so as to enclose the incandescent wire and cutting off the second marginal longitudinal strips of the lamellæ tape, all of said operations up to and with the exception of the last named applying operation being performed in an uninterrupted series without any hand labor.

In witness whereof I affix my signature.

KONRAD SCHAFFLER-GLÖSSL.